

ALBERT, KING OF THE BELGIANS, AND MARSHAL JOFFRE AT FURNES.

# THE NEW AGE ENCYCLOPÆDIA

EDITED BY  
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ASSISTED BY A LARGE STAFF OF  
SPECIALISTS

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Banka—Carmona

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## ABBREVIATIONS USED IN THIS WORK

ac., acres.  
alt., altitude.  
Amer., American.  
anat., anatomy.  
anc., ancient.  
ann., annual.  
Arab., Arabian.  
arch., architecture.  
astron., astronomy.  
A.S., Anglo-Saxon.  
A.V., Authorized Version.

biol., biology.  
bor., borough.  
bot., botany.  
b.p., boiling-point.  
Brit., British.

c., about (Lat. *circa*).  
cap., capital.  
cent., century.  
*cf.*, compare.  
chem., chemistry.  
Chin., Chinese.  
class., classical.  
co., county.  
Co., Company.  
coll., college.  
comm., commune.  
cub. ft., cubic feet.

d., died.  
Dan., Danish.  
dep., department.  
dist., district.  
div., division.

E., east.  
eccles., ecclesiastical.  
ed., editor, edited, edition.  
*e.g.*, for example.  
Eng., English.  
Episc., Episcopal.

*fl.*, flourished.  
Flem., Flemish.  
fort tn., fortified town.  
Fr., French.  
ft., feet.

Gael., Gaelic.  
geol., geology.  
geom., geometry.  
Ger., German.  
gov.-gen., governor-general.  
Gr., Greek.

Heb., Hebrew.  
h.p., horse-power.

Ind., Indian.  
in., inch, inches.  
I., isl., island.  
Ital., Italian.

Jap., Japanese.

Lat., Latin.  
l. bk., left bank.

m., miles.  
mar., maritime.  
maths., mathematics.

M.E., Middle English.  
 med., medicine.  
 M.P., Member of Parliament.  
 m.p., melting-point.  
 mrkt. tn., market town.  
 ms., manuscript; mss., manuscripts.  
 Mt., Mount.  
 mts., mountains.  
 munic., municipal.  
 myth., mythology.

N., north.  
 Norweg., Norwegian.  
 N.T., New Testament.

O.E., Old English.  
 O.T., Old Testament.

par., parish.  
 parl., parliamentary.  
 Pers., Persian.  
 Pop., Population.  
 Port., Portuguese.  
 Presb., Presbyterian.  
 prof., professor.  
 Prot., Protestant.  
 prov., province.  
 pub., published.

r. bk., right bank.  
 R.C., Roman Catholic.  
 riv., R., river.

R.V., Revised Version.  
 ry. jn., railway junction.

s., south.  
 Scot., Scottish.  
 seapt., seaport.  
 Soc., Society.  
 Span., Spanish.  
 sp. gr., specific gravity.  
 sq. m., square miles.  
 Swed., Swedish.

temp., temperature.  
 theol., theology.  
 terr., territory.  
 tn., town.  
 trans., translation, translated.  
 trib., tributary.  
 Turk., Turkish.

U.K., United Kingdom.  
 univ., university.  
 U.S., United States of America.

vil., village.  
 vols., volumes.

w., west.  
 wat.-pl., watering-place.

yds., yards.

zool., zoology.

*Note.*—Names printed in small capitals, and occurring in the course of an article, indicate that there is a special article under that head.

# THE NEW AGE ENCYCLOPÆDIA. Vol. II.

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**Banka.** (1) Isl., Dutch E. Indies ( $2^{\circ} 18' \text{ s.}$ ,  $106^{\circ} \text{ E.}$ ); narrow, hilly; tin, fishing. Area, 4,460 sq. m.; pop. 115,200. (2) Tn., Formosa ( $25^{\circ} 6' \text{ N.}$ ,  $121^{\circ} 26' \text{ E.}$ ); tea, camphor. Pop. c. 50,000.

**Bankalan**, tn., w. coast of Madura I., Java, Dutch E. Indies ( $7^{\circ} 2' \text{ s.}$ ,  $112^{\circ} 45' \text{ E.}$ ). Pop. 14,500.

**Bankimachandra Chattopādhyāya** (1838–94), Bengal novelist; established Ind. school of fiction based on Scott and other romancers; author of 'Bande Mataram' ('Hail, mother!'), the hymn of Bengali nationalism.

**Bankruptcy.** The law of bankruptcy in Britain affords relief to insolvent debtors, who, by surrendering their property for the benefit of their creditors, are relieved from liability in regard to their debts. One creditor is prevented from obtaining undue advantage over his fellow-creditors, either by making a secret arrangement with the debtor, or by his own fraud. The debtor is prevented from taking improper advantage of his creditors, and is punished if he is guilty of fraud. The administration

of the bankrupt's estate, until a trustee is appointed, is carried out under the supervision of an official receiver appointed by the Board of Trade. There is a difference between a person who is insolvent and a bankrupt. An insolvent trader is one who, if pressed for payment, would not be able to meet all his liabilities; but by means of loans, or part payment of debts, he may contrive to avoid bankruptcy altogether.

Proceedings in bankruptcy are commenced by a creditor or creditors with aggregate claims of £50, on proof of their claim and the commission by debtor of an 'act' of bankruptcy: (1) failure to satisfy creditor on a bankruptcy notice; (2) the making of an assignment for the creditors generally; (3) his absconding or keeping house; (4) giving notice of suspending payments; (5) filing a declaration of inability to pay; (6) if his goods are seized. Intent is needed to make preferential treatment of a creditor an act of bankruptcy. The court, on being satisfied as to the matters alleged in the petition, issues a 'receiving

order.' The official receiver thereby becomes the receiver or protector of the property until a trustee is appointed by the creditors. Within seven days of the receiving order being made, the debtor must furnish to the official receiver his statement of affairs, after which he will be required to attend for public examination on oath. The official receiver makes a report on the debtor's statement of his affairs, and to a great extent the debtor's discharge depends on the nature of this report. Within fourteen days after the receiving order, a general meeting of the creditors is held, and this meeting decides whether the debtor shall be adjudged bankrupt, or whether a composition or an arrangement shall be accepted from him. If the debtor is adjudged bankrupt, the creditors then appoint a trustee to wind up the bankrupt's estate, or, failing them, the Board of Trade appoints a trustee, and it is his duty to realize the property and to divide the proceeds amongst the creditors. At any time after he has been adjudged bankrupt, but not until his public examination has been concluded, the bankrupt may apply for his discharge. The court may grant, refuse, or suspend the discharge, or may grant it conditionally. The court will, as a rule, grant the discharge, provided that a good dividend has been paid, that the bankrupt shows that his accounts have been properly kept, that he has not been recklessly extravagant, or indulged in rash or hazardous speculation, or been guilty of

misdemeanour in his business. The court, however, must suspend the discharge for two years at least in such circumstances as the following: when a dividend of 10s. in the £ has not been paid; when the bankrupt has not kept proper books for three years preceding his bankruptcy; when he has contracted debts with no reasonable prospect of being able to pay them; when he has been previously adjudged bankrupt or been fraudulent.

If an undischarged bankrupt obtains credit of £20 or upwards, without disclosing that he is undischarged, he is liable to two years' imprisonment; all property accruing to him until he receives his discharge will go to his creditors; and he cannot sit or vote in either House of Parliament, or act as a J.P., or fill the office of county or borough councillor, or sit on various other local boards.

Where the estate of the debtor is not likely to exceed £300, the court may order it to be summarily administered with the object of saving time and expense. In London, bankruptcy business is administered by the High Court; in the provinces by the local county courts.

Williams, *Law and Practice of Bankruptcy* (7th ed., 1898); Robson, *On the Law of Bankruptcy* (6th ed., 1887); Goudy's *Law of Bankruptcy in Scotland* (1895).

**Banks.** A crude system of banking appears to have existed amongst the ancients several centuries before Christ, while among the later Greeks and Romans the regulation of banks was established upon a fairly

well-defined basis. These early banks received money, sometimes, but not always, at interest, and repaid it at their customer's written order, or at a stipulated time, charging a commission like all modern banks. But banking, as it is now understood, first came into existence in 1157, when the Bank of Venice was established. Other early banking establishments were the Bank of Barcelona (1401), the Bank of Genoa (1407), the Bank of Amsterdam (1609), the Bank of Hamburg (1619), and the Bank of Stockholm (1668). The Amsterdam Bank, during the century following its foundation, became the world's central depository.

The foundation of the Bank of England in 1694 was due to a Scotsman, William Paterson, who was also the promoter of the Darien Scheme. For a long period the London goldsmiths had changed foreign money and lent at interest. James I., Charles I., and Charles II. borrowed from the goldsmiths, and the account of James I.'s relations with George Heriot, in Scott's *Fortunes of Nigel*, is familiar. The Bank of Scotland was established in 1695. These banks secured the privilege of issuing notes, being the first banks to issue paper on their own credit. The Bank of Ireland was established in 1783. Cheques were first issued in England in 1781.

The U.S. National Banking System arose out of the large credit issues of the Civil War. National banks are controlled by Treasury. Cities of over 6,000

inhabitants may have no National bank with less than \$100,000 capital, and this varies to \$25,000 in cities of less than 3,000; half capital must be paid in before business can commence, and 25 per cent. must be transferred in government bonds to Treasury, which authorizes issue of notes to full par (not exceeding market) value of bonds. County banks must maintain reserve of 15 per cent. of outstanding notes and deposits, three-fifths of which can be redeposited in seventeen large (reserve) city banks. Reserve banks must keep 25 per cent. reserve, but half can be in National banks in New York, Chicago, and St. Louis.

*Bank-note*, promissory note issued by a bank, and payable on demand; in England the lowest note is of £5 value; in Scotland and Ireland notes of £1 are issued. In U.S. the lowest note issued by National banks is for \$5, but government issues them for \$2 and \$1. Bank of England notes are printed in black upon water-marked paper, and are legal tender except in Scotland and Ireland. After once being returned to the bank they are not again put into circulation.

*Bank-rate*, rate of discount charged by the chief, or state, banks, as opposed to the market rate. In England it is fixed by the Bank of England, and constantly fluctuates according to the scarcity or abundance of money in circulation.

*Modern Banks*.—According to their functions banks are either *banks of deposit* or *banks of issue*. A bank of deposit has power to

receive money from depositors, but not to issue notes. A bank of issue has the right to receive deposits and issue bank-notes. In England and Wales the right to issue notes is confined chiefly to the Bank of England. The Bank of England is not a state bank, but it is the bank in which state revenue is deposited, and is the agent for the government in raising loans. On account of its peculiar business, other banks have found it convenient to deposit a certain amount of their cash with it, and every bank which is a member of the clearing-house must keep an account at the Bank of England. Apart from these circumstances, the Bank of England is in the same position as all other banks, and conducts its business like other banks. The original capital of the Bank of England was £1,200,000; in 1816 it amounted to £14,553,000, at which figure it has since remained.

*Private Banks and Joint-stock Banks.*—The number of private banks is diminishing year by year. They cannot consist of more than ten partners, whose liability is unlimited. With regard to joint-stock banks, the legislation of 1826 prohibited the issue of notes for less than £5 in England and Wales; but it expressly permitted, outside a radius of 65 m. from London, the establishment of joint-stock banks with the right to issue notes; and withheld this right from all banks within the radius, excepting the Bank of England. An Act was passed (1833) permitting joint-stock banks to carry on a deposit business in London.

Since the passing of Acts of 1826 and 1833, the business of deposit banks in England and Wales has gradually increased, and has reached gigantic proportions, largely owing, no doubt, to the Companies Acts of 1858 and 1862, which allowed limitation of liability of shareholders. A recent feature of banking has been the absorption of private and small joint-stock banks by large concerns. National banks are only banks of issue in U.S., but there are numerous deposit banks and loan and trust companies which pay interest on deposits.

*The Clearing-house.*—A number of the London private bankers arranged, in 1775, a scheme (the clearing-house) by which the representatives of each bank met daily and exchanged the cheques which each held on the other. The accounts so exchanged were added up, and the differences in the amounts only were handed over in cash. For many years the private banks had a monopoly of the clearing-house, but in 1854 the joint-stock banks in London were allowed to join. There are still, however, only seventeen banks entitled to send representatives to the clearing-house. All other banks must do their clearing business through the agency of a bank which is a member of the clearing-house. The clearing-house and all banks using it have accounts with the Bank of England, and the balances at the close of each day's transactions are settled by transfer from one account to the other in the books of that bank. By the system of *Country Clearing*, cheques held

by country banks on other banks are sent to the clearing-house, and thence are passed on to the London agents of the banks on which the cheques are drawn. The London agent sends these cheques nightly to his principals in the provinces. In this way each country bank ascertains what amount may be due by it to all other banks, and what it may be entitled to receive. The difference, if any, is then sent on to its London agent. Thus each bank has but one remittance to deal with each day, instead of having to make remittances to or to receive remittances from banks in all parts of the kingdom.

*Banker and Customer.*—The relation of banker and customer is that of debtor and creditor. The customer lends money to or deposits money with the banker, who thereby becomes its owner, but undertakes to repay it either by honouring the customer's cheques or by repaying the whole or part on due notice. That the banker becomes the owner of the customer's money is shown by the fact that he trades with it and keeps profit. Again, were the bank to stop payment, the customer could not demand his money back, but merely rank as an ordinary creditor of the banker. Should a banker refuse to honour the cheque of a customer who has sufficient funds to his credit in the bank, such customer is entitled to damages, and can bring an action for breach of contract. When a customer deposits securities with his banker as a guarantee for the repayment of a loan made

by the banker, the latter has a lien on the securities—that is, a right to retain them until the loan has been repaid. Indeed, in some cases the banker, when the lien has once arisen, has a right to sell such securities and pay himself out of the proceeds. When a customer has deposited securities as a guarantee for a particular loan, the banker must return them when the loan is repaid, and has no further lien on them, even though the banker may have made other advances to him which have not been repaid. Of course, where the securities have been deposited to cover advances made by the banker generally, the banker has a lien on them until the whole amount has been repaid.

*Banking during the War.*—The financial crisis at the outbreak of war in August 1914 led to the suspension of the Bank Act, which forbade the issue of notes by a bank over the statutory limit, unless gold of an equivalent amount were held. The suspension was rendered unnecessary by the issue of £1 and 10s. currency notes. These notes were issued to the banks—the amount given to each being based on their current and deposit accounts—as an advance by the Treasury, bearing interest at current bank rate. The security for the advance consists of a floating charge on bank assets, and against the issue the Treasury hold a reserve of coin and bullion amounting to £28,500,000. How the circulation of these notes has grown may be seen from the fact that while in Dec. 1914 the ratio of gold to notes was 48·1 per



cent., in June 1919 it had fallen to 8·3 per cent. In the last two days of July 1914 the bank rate rose from 3 to 8 per cent., afterwards going to 10 per cent.; many banks refused to pay in gold, but the advent of the holidays, wisely extended by government, prevented any real run on the banks. The granting of a moratorium on bills of exchange and a general moratorium helped to tide matters over. During the war there was an enormous increase in banking figures all over the world, which has been maintained since the armistice, but which does not necessarily imply a corresponding expansion in the wealth of the community. A remarkable feature has been the increase of paper money in circulation. Before the war the average amount of Bank of England paper in circulation was £30,000,000; now it is nearer £80,000,000.

*Savings Banks.*—(1) Post Office; (2) Trustee. Former were established by Post Office Savings Bank Act (1861) to grant facilities, with state guarantee, for deposit of small savings at low interest; latter may only be formed with approval of National Debt Commissioners, not to be run for profit, and are under state inspection.

*Co-operative Credit Banks* originated in Germany, where they are conducted either on Raiffeisen or Schulze-Delitzsch principles; Raiffeisen started in Rhenish Prussia, in 1849, loan banks, which have gradually spread all over Germany and become a federation; Schulze started Schulze-Delitzsch banks, by which ad-

vances are made at low interest (1850), as profitable investment, rather than philanthropic effort. The *Irish Agricultural Credit Banks* established since 1889 are, in imitation of former class, for benefit of borrower; movement less popular in England and Scotland, but since 1901 (when English Agricultural Organization Society was formed) forty-five credit banks (with Central Agricultural Bank) have been established in Great Britain.

*Bank Holidays.*—The following days are kept as bank holidays: in England and Ireland, Good Friday, Easter Monday, Whit-Monday, 1st Monday in August, Christmas and Boxing Days; in Scotland, Christmas Day, New Year's Day, Good Friday, and 1st Mondays in May and August. By a Bank Holiday (Ireland) Act (1903), March 17 was added as a bank holiday for that country.

Kerr, *Hist. of Banking in Scotland*; Herbert, *The Law of Banks and Banking*; Warren, *The Story of the Bank of England*; Clayton, *Co-operation*.

**Banks**, SIR JOSEPH (1743–1820), Brit. botanist, known as 'the father of Australia,' accompanied Captain Cook on his first voyage; was mainly responsible for first colonization of Australia (Botany Bay). President of the Royal Society for forty-one years. *Banksia* shrubs were named after him by Linnæus.

Home, *Life* (1822).

**Banks**, NATHANIEL PRENTISS (1816–94), Amer. politician and soldier, governor of Massachusetts (1858); as major-gen. of volunteers defended Washington

from 'Stonewall' Jackson's army (1862); took Port Hudson (1863). Independence of Scotland. Traditional Bore Stone marks site.

**Banks**, THOMAS (1735-1805), Eng. sculptor, whose works in this country include the monument in Westminster Abbey to Dr. Watts, and the effigy at Stratford of Shakespeare.

**Banksia**, Australian shrub or tree of order Proteaceæ—'honeysuckle trees'; flowers in dense spikes; fruit in woody cone.

**Bankura**. (1) Dist., Burdwan div., Bengal, India; flat and well watered, but liable to drought and flood; has silk, cotton, brass, and shellac manufactures. Area, 2,621 sq. m.; pop. 1,138,000. (2) Cap. of above dist. (23° 14' N., 87° 4' E.); manufactures silk and cotton. Pop. 23,000.

**Bann**, riv., N. Ireland, rises (54° 10' N., 6° 3' W.) in Mourne Mts., and flows through Lough Neagh to the Atlantic; salmon fisheries; length 90 m.

**Bannatyne**, GEORGE (?1545-1608), collector of anc. Scot. poems, in whose honour the famous *Bannatyne Club* was founded in Edinburgh in 1823, for the publication of Scot. historical and literary MSS.

**Banneret** (Fr.), high grade of knighthood, dating back to reign of Edward I., conferred upon the field of battle for distinguished service. The last recorded instance of its being conferred was by Charles I., in the case of John Smith, at Edgehill (1642).

**Bannockburn**, village, Stirling-shire, Scotland (56° 6' N., 3° 54' W.); manufactures tweeds, tartans, and carpets; has coalmines and tanneries. Pop. 2,500. Here Robert the Bruce disastrously defeated English under Edward II.

(June 24, 1314), and thus secured independence of Scotland. Traditional Bore Stone marks site.

**Banns of Marriage** (formerly *bannes*; A.S. *gebann*, 'proclamation'), the public legal notice given in church of an impending marriage. The publication of banns used to be compulsory, but in lieu of banns marriages in church may now be solemnized by licence. See MARRIAGE.

**Bannu**, trans-Indus dist. of N.W. Frontier Province, India (32° 16'-33° 5' N., 70° 23'-71° 16' E.). Inhabitants, chiefly Mohammedan Pathans, who are mostly small-holders; wheat is principal crop. Territory came under Brit. influence (1845-6), and was organized by peaceful methods of Edwardes. Chief tns., Bannu (Edwardesabad) and Lakki. Area, 1,674 sq. m.; pop. 250,000.

**Banshee** (Irish, *bean sidhe*; Gael, *ban sith*), a female goblin common to Celtic myth., but more particularly to the folklore of Ireland and the W. of Scotland. Heard at night, 'the banshee's lonely croon' is believed to herald the death of some member of the family.

**Banswara**, feudatory state, Rajputana, India (23° 3'-23° 55' N., 73° 58'-74° 48' E.); more than half of state is jungle; agriculture is backward. Area, 1,946 sq. m.; pop. 165,500.

**Bantam**. (1) Residency, Java, Dutch E. Indies, W. extremity of isl. Area, 3,053 sq. m.; pop. 710,000 (principally Sundanese). (2) Tn. (6° 1' S., 106° 10' E.), 50 m. W. of Batavia. Once the chief centre of Portuguese, and later of Dutch in East; now

of little importance; gave name to bantam fowl.

**Bantam Fowls.** See POULTRY.

**Bantayan**, tn. and isl., Visayas group, Philippines ( $11^{\circ} 9' \text{ N.}$ ,  $123^{\circ} 44' \text{ E.}$ ); pearls, mother-of-pearl, tortoise-shell. Pop. of isl. 18,300; of tn. 13,300.

**Banteng** (*Bibos sondaicus*), species of wild ox of E. Indian Islands and Malay Archipelago; though ferocious, has been domesticated in Java.

**Banting System**, method of curing corpulency, proposed by Harvey, but first effectively practised by William Banting of Kensington (1796-1878).

**Bantock**, GRANVILLE (1868- ), Brit. composer; went round the world as conductor with George Edwardes company; succeeded Elgar as prof. of music at Birmingham University (1908); his numerous compositions include *Omar Khayyam*, *Atlanta in Calydon*, and *Hebridean Symphony*.

**Bantry**. (1) Seapt., co. Cork, Ireland ( $51^{\circ} 41' \text{ N.}$ ,  $9^{\circ} 27' \text{ W.}$ ); friezes, tweeds; fishing. Pop. 3,100. (2) Bay, one of best anchorages in s.w. of Ireland, entered by Fr. invading fleets in 1689 and 1796.

**Bantu**, generic name for language with many dialects, spoken by numerous native tribes occupying a large part of Africa s. of equator; also applied to tribes themselves, who however are often grouped under generic term Kaffirs; originally members of a conquering caste; great branches of Bantu race in Natal are the ZULUS, in Rhodesia the MATABELE and MASHONAS, in S.W. Africa the DAMARAS.

**Banville**, THÉODORE FAULLAIN

DE (1823-91), Fr. poet, eulogized by Victor Hugo for his *Odes Funambulesques*; wrote plays, including *Gringoire* (1866), trans. by Sir Walter Besant and W. H. Pollock as *The Balladmonger*, and played by Sir H. B. Tree.

**Banyan.** See BANIAN.

**Banyo**, settlement in former Ger. colony of Kamerun, W. Africa ( $8^{\circ} 45' \text{ N.}$ ,  $11^{\circ} 40' \text{ W.}$ ); captured during Great War by Brit. forces (Nov. 1915).

**Banyumas**, tn. and residency, Central Java ( $7^{\circ} 32' \text{ S.}$ ,  $109^{\circ} 20' \text{ E.}$ ). Area of residency, 2,147 sq. m.; pop. 1,270,600.

**Banyuwangi**, tn., Java, Dutch E. Indies ( $8^{\circ} 19' \text{ S.}$ ,  $114^{\circ} 20' \text{ E.}$ ); formerly cap. of native kingdom of Balambangan. Pop. 16,200.

**Banzai**, Jap. greeting ('a thousand years'); it was the war-cry of the Japanese during Russo-Jap. War of 1904-5.

**B.A.O.**, Bachelor of the Art of Obstetrics.

**Baobab**, or MONKEY BREAD (*Adansonia digitata*), African tree; one of bulkiest known; trunk sometimes measures upwards of 30 ft. in diameter; it produces a fruit, and fibre produced from bark is used in rope and cloth making. It is acclimatized in S. America and E. Indies.

**Bapaume**, tn., dep. Pas-de-Calais, France ( $30^{\circ} 6' \text{ N.}$ ,  $2^{\circ} 51' \text{ E.}$ ), 13 m. s. by E. of Arras, and 15 m. w. by s. of Cambrai, situated in a depression of a ridge which forms the watershed between the Somme and the Scheldt. In the Franco-Prussian War it was the scene of a French success after two days' struggle (Jan. 2-3, 1871), an event that was commemorated

by a statue of General Faidherbe. During the Great War it was defended by a division of French territorials for a brief period (Aug. 29-30, 1914) during the retreat to the Marne. The town remained in Ger. possession till March 17, 1917, when the Germans were forced to retire as a result of the first battle of the Somme, in which Bapaume was an important strategic objective. The famous clock tower, which told the time to the British when they were still S. of the Ancre, had been blown up, so that it might no longer serve as a landmark. During the great Ger. offensive from the Hindenburg Line in the spring of 1917 Bapaume again fell into the enemy's hands (March 21), and was finally recovered by the New Zealanders (Aug. 28). By the autumn of 1918 the ruins had been cleared, wooden huts had been constructed, and a good deal of the devastated land had again been put under cultivation.

**Baphomet**, name given to mysterious two-headed idol which Templars were said to worship with secret rites; probably a mediæval corruption of Mahomet.

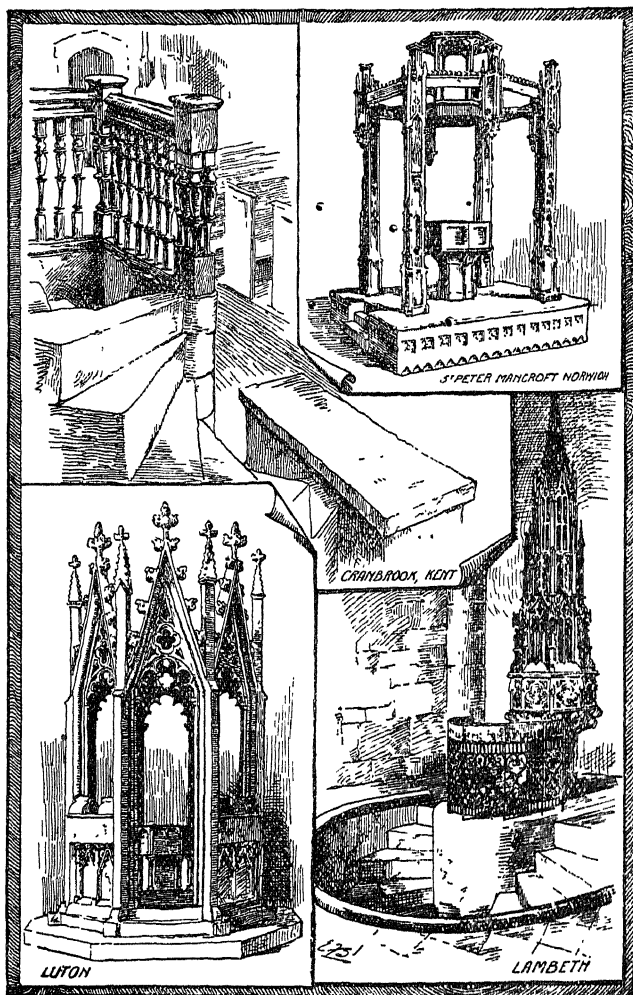
**Baptism**, the rite of initiation into the Christian Church, administered by immersion in water, or sprinkling therewith, to infants or those professing the faith. It is described as 'the outward and visible sign of inward and spiritual grace.' In O.T. (Jer. 4:14; Ezek. 36:25; Zech. 13:1) ceremonial immersion in water symbolizes repentance and moral cleansing. John the Baptist baptized disciples as a symbol of their repentance,

but he foretold that the Messiah would administer a baptism of a higher order, by baptizing with the Holy Ghost and fire (Luke 3:16). Jesus Christ was Himself baptized by John, and said that His disciples would be baptized with the Holy Ghost (Acts 1:5). This was fulfilled on the day of Pentecost (Acts 2:1 ff.). Water baptism played a great part in the missionary activities of the Apostles. In the early Church total immersion was the rule, but sprinkling of water on the forehead is now the usual custom. According to Catholic doctrine, valid baptism must be performed with water, and in the threefold Name, and may in cases of necessity be performed by the laity.

Those preparing for baptism in primitive times were called catechumens, the term still used to-day in the mission field. The BAPTISTS now administer baptism by immersion (in certain cases it is not altogether unknown in the Anglican Church); but they do not baptize infants, as is the general custom in the Anglican, Presb., R.C., and Eastern Churches. In the mission field, however, converts from heathenism are baptized in all Christian Churches after preparation as catechumens.

**Baptiste**, JEAN, name popularly applied to Fr. Canadians.

**Baptistery**, a chapel, separate building, or part of a church, where baptism is administered. The earliest baptisteries were octagonal, or circular, dome-shaped buildings. When infant baptism became general the font was usually placed symbolically near the western door of a church.



*Famous Baptisteries in English Churches.*

**Baptists**, a denomination of Christians, so called because of their views with regard to baptism. They hold that the Christian Church consists only of professing Christians, whom the Holy Spirit has regenerated, and that therefore only to such persons should baptism be administered. They agree that infants should not be baptized, and that baptism should only be by total immersion. With regard to Church government, they maintain that each individual congregation ought to be supreme in the management of its own affairs, and their Unions have thus no power over the congregations, beyond the giving of advice, or the general organizing of religious work at home and abroad. They have no authoritative creed, but a modified form of the Westminster Confession, adopted in 1689 by their general assembly, is held in respect by the majority of Baptists. The Baptists have divided up into various sects, of which there are a great number in U.S., including 'the Disciples of Christ,' 'the Tunkers,' 'the Wine Brennerians,' 'the Seventh-day Baptists,' etc. Scot. Baptists, as a whole, believe that each congregation should have a plurality of pastors; whereas in England the more usual method resembles the Presb. custom. In the 16th cent. numerous Baptists fled from Germany and Holland into this country, and underwent some persecution. After the Restoration also they suffered disabilities, but the Act of Toleration (1689) freed them from these. The Baptist sta-

tistics of 1916 showed 408,000 members in Brit. Isles; in U.S. there were 7,236,650.

**Bar**, in heraldry, a broad horizontal band crossing the escutcheon, but smaller than the fess. *Bar sinister*, as a sign of illegitimacy, is a misnomer, arising from a mistranslation of the Fr. *barre*, which in heraldry means a 'bend sinister.' A '*bâton sinister*' was often placed on a shield by heralds to indicate illegitimate birth.

**Bar**, **THE**. (1) Division in a court of law; in the higher courts K.C.'s are admitted within the bar, other legal members sit outside; collective term for all those members of the legal profession who have the right to appear at the bar on behalf of suitors. (2) The dock wherein the prisoner stands in criminal cases, hence the form of address, 'prisoner at the bar.' (3) A railed space in the House of Lords and a line on the floor of the House of Commons known as the 'bar of the House.' To be 'called to the bar' in England occurs when one of the Inns of Court summons a student in law, and he thus becomes a barrister.

**Bar**, **TRIAL AT**. Originally trial before all the judges, sitting together (*in banc*), of one of the superior courts at Westminster; now employed practically only in special criminal cases; most notable being Dr. Jameson (1896), Lynch (1903), Casement (1916).

**Bar**, fort. tn., Podolia, Russia (49° N., 27° 55' E.); grain; leather dressing, distilling; scene of *Confederation of Bar*. Pop. 11,000, more than half Jews.

**Bara Banki.** (1) Dist., United Provinces, India; rice, wheat, sugar, opium. Area, 1,758 sq. m.; pop. 1,179,000. (2) Tn. of above dist. (26° 56' N., 81° 12' E.); cotton, sugar. Pop. 3,000.

**Baraba Steppe**, immense stoneless region, Siberia (51°–56° N., 74°–83° E.); forests in N.; grain in fertile areas; colonized by Russians (1767). Area 100,000 sq. m.

**Barabbas** ('son of a father,' or 'of a rabbi'), a robber whose release was demanded from Pilate in preference to that of Jesus.

**Barabra**, a Mohammedan and agricultural people of Nubia, between Assuan and Dongola.

**Baragan Steppe**, desolate plain, Rumania (44° 38' N., 27° 15' E.); Bulgarians crossed Danube here (Dec. 1916) in rear of retreating Rumanian armies.

**Baraguay d'Hilliers.** (1) LOUIS (1764–1812), Fr. general, distinguished in Italy, Egypt, and Russia under Napoleon. (2) ACHILLE, his son (1795–1878), marshal of France; prominent in Crimean, Italian, and Franco-Prussian wars.

**Barahona de Soto**, LUIS (1560–90), Span. poet; chief work, *Primera parte de la Angélica*; highly praised by Cervantes and by Lope de Vega.

**Baralong Case**, THE. On August 19, 1915, the steamer *Nicosian*, with a cargo of army mules from America, was torpedoed by a Ger. submarine about 60 m. off Queenstown, and a boarding party was sent to finish off the vessel with bombs. The Brit. armed auxiliary *Baralong*, disguised as a tramp steamer, came on the scene and sank the U-boat with gun-fire. Ger. crew put off in a boat to

*Nicosian*. The Amer. cattlemen, observing that the Germans in the first boat carried bombs, allowed them on board, and then battered in their heads with furnace bars. The second boatload met a similar fate. *Nicosian* proceeded to Avonmouth. In Nov. the Ger. Government sent a protest to the Brit. Government, and adduced sworn statements by cattlemen that the men of *Baralong* murdered the crew of the submarine as they were struggling in the water. The documents were thoroughly discredited. Germany demanded that the men of *Baralong* be tried for murder. On Dec. 14 Sir Edward Grey offered to submit the case to a tribunal of Amer. naval officers, provided that Germany agreed to have three incidents of Ger. barbarism investigated at the same time. The offer was declined, and Germany threatened futile zepelin warfare in retaliation. The agitation was skilfully worked up in Germany as an excuse for more 'frightfulness.'

**Baranetz**, or BAROMETZ, the rhizome of a fern native to deserts of Scythia; known as 'Scythian lamb,' because a stout piece of the rhizome can be trimmed to a remarkable likeness of the animal.

**Baranov**, isl., Alexander Archipelago, Alaska (56° 50' N., 135° W.); coal, gold; fur; fishing and canning industries. Sitka, on W. coast, formerly cap. of Alaska. Pop. 1,400.

**Baranquilla.** See BARRANQUILLA.

**Barataria.** (1) So-called island assigned in *Don Quixote* to Sancho

Panza as his government. (2) Retreat, delta of Mississippi (29° 40' N., 90° W.), of band of smugglers, slavers, and pirates under Jean Lafitte. (3) Imaginary kingdom in Gilbert and Sullivan's *Gondoliers*.

**Baratynski**, JEVGENI ABRAMOVICH (1800-44); Russian poet; adventurous early life; wrote much-read *Eda*, and *The Gipsy Girl*, his finest work.

**Barb**, backward arrow point, or tip of a fish-hook; Barbary or Arab breed of horses; breed of pigeons; linen band about neck and chin worn by nuns; mucous membrane under tongue of horses and cattle; fleshy appendages on mouth of barbel; a leaf of heraldic rose.

**Barbacena**, tn., Brazil (21° 11' S., 43° 59' W.); agriculture; gold mining; cotton, cheese. Alt. 3,500 ft. Pop. 6,000.

**Barbacoas**, tn., Colombia (1° 41' N., 78° 8' W.); gold mining; commercial importance declined since *tagua* (vegetable substitute for ivory) is no longer in demand on the Ger. market. Pop. 6,000.

**Barbados**, most easterly of W. Indian islands (13° 11' N., 59° 32' W.); mostly of coral formation; extremely fertile; sugar-cane cultivation and sugar manufacture have been staple industries since 17th cent.; molasses, rum, hides exported; invigorating climate; health resort. Administered by governor, legislative council, and house of assembly. Contributed £80,000, mostly in sugar, to Imperial Government during Great War. Cap. is BRIDGETOWN. Area, 166 sq. m.; est. pop. 176,000.

**Barbados Cherries**, edible three-

stoned fleshy fruits of *Malpighia glabra* and *M. ureus*, trees native to the W. Indies.

**Barbados Earth**, a siliceous deposit, originally an oceanic ooze, containing Radiolarian remains.

**Barbados Leg**, another name for ELEPHANTIASIS.

**Barbara**, mnemonic word, used in formal logic to denote a syllogism of the first figure.

**Barbara**, St. (fl. 3rd cent.), Christian martyr; her legendary connection with thunderstorms has made her the patron of artillery; feast, Dec. 4.

**Barbarians** (Gr. *barbaros*), term used by Greeks to describe all non-Greeks, probably from onomatopoeitic word equivalent to 'babbler,' because their speech seemed to the Greeks to be mere babble; later Romans applied it to those beyond pale of their civilization.

**Barbarossa**. See FREDERICK I.

**Barbarossa** ('Red-beard'), HORUK and KHAIR EDDIN, Turk. corsairs; Horuk was captured and beheaded by the Spaniards at Oran (1518). Younger brother captured Algiers (1519), Tunis (1533), and became admiral of Turk. fleet under Solyman II. (1536). From that year until his death (1546) he was known as 'the scourge of the Mediterranean,' and the inveterate foe of all Christians.

**Barbary**, former name for region of N. Africa (23°-37° 20' N., 11°-25° E.), is inhabited by Berbers; includes MOROCCO, ALGERIA, TUNIS, TRIPOLI, and BARCA. *Barbary Pirates* were the corsairs of these coasts.

**Barbary Ape** (*Macacus inuus*), tailless macaque monkey; only



one species native of N. Africa, others Asian; now preserved in Europe, on Rock of Gibraltar.

**Barbastelle** (*Synotus barbastellus*), bat found in England and elsewhere, with thick beard and hairs tipped with yellow.

**Barbatimao**, native name of Brazilian tree of *Mimosa* group; used for tanning; contains 2% per cent. of tannin.

**Barbault**, ANNA LETITIA (1743–1825), Eng. poetess, daughter of Dr. John Aikin; wrote *Hymns in Prose for Children*; ed. the Eng. novelists in 50 vols.

**Barbecue**, buccaneer's term for a framework on which large pieces of meat were roasted; also applied to meat thus roasted; in U.S. an *al fresco* feast where meat is similarly cooked.

**Barbed Wire**, strands of wire twisted together and armed with short projecting spikes; invented in America about 1867 for inexpensive cattle fencing; prevents cattle rubbing against wire, and so damaging it; largely used in the Great War for forming entanglements in front of trenches, and thus holding up attacks; such entanglements were cut by pliers or by high-explosive shells, or crushed by Tanks before an advance. By Barbed Wire Act, 1893, placar is responsible for damage done to persons or animals not trespassing.

**Barbel**, a European fish with four barbels (Lat. *barba*, 'beard').

**Barbellion**. See CUMMINGS, BRUCE.

**Barber** (Lat. *barōa*, 'beard'), trimmer of beards; Eng. barbers were incorporated in 1461 by Edward IV.; they were joined to the Surgeons' Company by

Henry VIII., but their operations, apart from beard trimming, were confined to blood letting and extraction of teeth; in 1745 George II. gave the barbers a separate corporation, but barber's sign, the pole, may still sometimes be seen accompanied by the surgeon's basin. Barber's shop, a place of gossip in Horace's time, remained so until days of daily postman and newspaper; *Barber of Seville*, comic opera, masterpiece of Rossini.

**Barber**, a name given by whalers to frost rime, which appears like smoke rising from water between ice floes in cold spring; vapour condenses to ice spicules; when driven by a gale these almost 'shave' the skin off the face.

**Barberini**, Ital. family of note in 17th cent.; Maffeo Barberini became Pope as Urban VIII. (1623), and several relatives were cardinals; the rapacity with which they pillaged objects of art for the adornment of their palace (still extant) gave rise to saying, '*Quod non fecerunt barbari, fecerunt Barberini.*'

**Barberino di Mugello**, tn., Tuscany, Italy (44° N., 11° 14' E.), 16 m. N. of Florence; hat making; remains of old château. Pop. (comm.) 12,000.

**Barberry** (*Berberis vulgaris*), shrub of genus allied to *Mahonia*; berries make good preserves; is now being extensively destroyed, owing to the part which it plays in propagating the 'rust' of wheat.

**Barberton**, dist. and tn., Transvaal, S. Africa (25° 45' S., 31° 2' E.); goldfields. It was captured by General (Lord) French, Sept. 13, 1900. White pop. 2,400.

**Barbette** (Fr.), protected platform for artillery, either in a fortification or battleship.

**Barbey d'Aurevilly**, JULES AMÉDÉE (1808–89), Fr. author; noted for his extraordinary handling of criminology in his novels; wrote *Une Vieille Maîtresse*, *Le Chevalier des Touches*, etc.

**Barbican**, an outwork tower, to protect an entrance. Places bearing this name in London and other towns mark the sites of such buildings; still seen at Alnwick and Warwick.

**Barbitone**, name given in the Brit. Pharmacopœia to diethylbarbituric acid (known to the Germans as veronal); a scheduled poison and a dangerous habit-forming drug; should never be taken except under medical prescription; action hypnotic.

**Barbizon**, vil., Seine-et-Marne, France (48° 25' N., 2° 35' E.), outskirts of Fontainebleau forest; home of Millet; gave name to Barbizon school of landscape painters (1840–75), consisting of Rousseau, Millet, Corot, Daubigny, Dupré, etc.

**Barbou**, family of Fr. printers, comprising Jean (16th cent.) of Lyons, his son Hugues of Limoges, and Joseph Gerard (18th cent.) of Paris; celebrated for beauty of their editions; business purchased by Delalain (1809).

**Barbour**, SIR DAVID MILLER (1841– ), Brit. financial specialist, of Irish family; member Royal Commission on Gold and Silver (1886); financial member of council of gov.-gen. of India (1887–93); served subsequently on commissions dealing with financial questions regarding Ireland, West Indies, Transvaal, etc.;

author of various books—*The Theory of Bimetallism*, etc.

**Barbour**, JOHN (1316–95), Scot. poet; regarded as father of Scot. poetry; archdeacon of Aberdeen; wrote a narrative poem, *The Brus*, in twenty books and upwards of 13,000 lines, for which he received from King Robert II., in 1377, a gift of £10, and in following year a perpetual annuity of twenty shillings. *The Brus* was first printed at Edinburgh in 1571.

**Barboux**, HENRI MARTIN (1834– ), French lawyer and 'Immortal'; was secretary to Marine Prizes Council (1870–1); was counsel for de Lesseps in Panama scandal. Pub. *The Panama Affair*.

**Barbuda**, isl., Leeward group, Brit. W. Indies (17° 40' N., 61° 46' W.); coral formation; Sea Island cotton; sponge industry. Area, 62 sq. m.; pop. 870.

**Barbus**. See CARPS.

**Barbusse**, HENRI (1874– ), Fr. author; on the outbreak of Great War joined the ranks, and twice won the Croix de Guerre; wrote a remarkable war book, *Le Feu*, a crushing indictment of war and the war spirit.

**Barca**. See BARKA.

**Barcarolle**, a class of song peculiar to Venetian gondoliers, with a simple, swinging measure; hence it has become name for a similar sort of musical composition; form used by Mendelssohn, Chopin, and others.

**Barcellona**, tn., Messina, Sicily (38° 9' N., 15° 13' E.); silk industries; sulphur baths; was laid waste by an earthquake in 1908. Pop. (comm.) 24,000.

**Barcelona**. (1) Prov., Catalonia, Spain; mountains rich in

iron, etc.; wine, oil, fruit, cork; woollens, cottons. Area, 2,969 sq. m.; pop. 1,200,000. (2) Cap. of above (41° 23' N., 2° 11' E.); first commercial centre and second seaport of Spain; good harbour; univ.; *Rambla* is one of finest promenades in Europe; noble cathedral; cotton manufactures; soap and glycerine factories, tanneries, etc.; chief exports, almonds, saffron, olive oil, wines. Pop. 621,400.

**Barchon**, FORT, one of six main forts of Liège; fell to Germans (Aug. 6, 1914).

**Barclay**, ALEXANDER (1475–1552), Scot. poet; his eclogues were among first pastorals in English; chiefly remembered as author of free trans. of Sebastian Brandt's *Narrenschiff*, 'Ship of Fools,' a poem in seven-line Chaucerian stanzas.

**Barclay**, FLORENCE (1862– ), Eng. novelist; has written numerous sentimental and very popular novels, including *The Rosary*, *The Upas Tree*, etc.

**Barclay**, JOHN (1734–98), Scot. Presb. minister, founder of Berean (see Acts 17: 11) or Barclayite sect, now almost extinct.

**Barclay**, JOHN (1758–1826), Scot. anatomist; collection now forms nucleus of Barclay Museum, Edinburgh; was largely instrumental in founding the Dick Veterinary College, Edinburgh.

**Barclay**, ROBERT (1648–90), Scot. Quaker; after having suffered persecution was appointed governor of Penn's colony, New Jersey; author of the *Apology* (1678), still the standard exposition of Quakerism.

**Barclay de Tolly**, MICHAEL, PRINCE (1761–1818), Russian

field-marshal of Scot. extraction; served with distinction against Napoleon (1806–7); minister of war (1810); commanded army with success during Fr. invasion (1812), and Russian army during invasion of France (1814).

**Barcochba**, name given to Simeon, who led abortive Jewish rebellion against Rome in time of Hadrian (A.D. 131–5).

**Bar Council**, in England, voluntary body (founded 1883), consisting of attorney-general and solicitor-general, ex-holders of these offices, together with forty-eight members elected by the whole bar, whose duty is 'to deal with all matters affecting the profession, and to take such action thereon as may be deemed expedient.'

**Bard**, name for Celtic poet, who enjoyed special social rank; later applied to verse-writers in general. As national minstrels they flourished in Early Gaul and Britain, and their primitive office has been revived in Wales. The Welsh bards were exempt from taxes and military service, and up to the time of Elizabeth, bardic gatherings (*Eisteddfodau*) were summoned by royal authority. The modern revival began in 1798. See EISTEDDFOD.

**Bardi**, comm., prov. Piacenza, Italy (44° 38' N., 9° 44' E.); fortified château. Pop. 7,600.

**Bardsey Island** ('Bards' I.), co. Carnarvon, Wales (52° 45' N., 4° 48' W.); lighthouse; legendary last retreat of Welsh bards; farming and fishing.

**Bardwan**. See BURDWAN.

**Barebone's Parliament** (1653), a parliament, so called from one of its members; summoned by

Cromwell, consisting of representatives from England, Scotland, Ireland, and Wales. Its rash measures alarmed Cromwell, who forced its members after a five months' session to vest their powers in himself.

**Barefooted Religious Orders**, or **DISCALCED ORDERS**, include those who went literally barefoot, such as the Alcantarine branch (before 1897) of the Franciscan Order, and those who wear sandals, such as Franciscans generally, with the Cletettes and Capuchin sisters, the Camaldolese, Discalced Carmelites, Passionists, and branches of the Cistercians, Augustinians, and Servites.

**Barège**, a gauze-like fabric for women's dresses, made of silk or cotton and worsted; though called after Barèges it is really produced at Bagnères-de-Bigorre; 16 m. distant.

**Barèges**, vil., Hautes-Pyrénées, France (42° 54' N., 0° 4' E.); a summer resort; sulphurous springs; alt. 4,040 ft.

**Bareilly**, tn., United Provinces, India (28° 2' N., 79° 25' E.); modern fort; college; sugar refining; manufactures bamboo furniture; military station. Mutiny of 1857 first broke out here. Pop. 129,400.

**Barents**. (1) Isl., Spitzbergen group (78° 29' N., 21° 32' E.), in Arctic regions; named after Dutch navigator; highest point, 1,998 ft. (2) Sea, between Spitzbergen and Novaya Zemlya (70°–80° N., 25°–50° E.); shallow; pack ice, fogs, in N.

**Barents**, WILLEM (*d.* 1597), Dutch navigator; conducted three unsuccessful expeditions from Holland in search of a N.E. pass-

age to Asia (1594–7). On the third voyage he discovered Spitzbergen, rounded Novaya Zemlya, where he was compelled to winter, and there died. In 1871 his camp and relics were discovered, and in 1875 a portion of his Journal was found. Barents's *Voyages*, trans. and pub. by Hakluyt Soc. (1876).

**Barère de Vieuzac**, BERTRAND (1755–1841), Fr. journalist and revolutionary; became deputy to States-general (1789), delegate to National Convention (1792); at death was last surviving member of Committee of Public Safety. A conscienceless 'trimmer,' he joined Robespierre after having attacked him; took employment under Napoleon; went over to Bourbons (1814); banished as a regicide (1815); accepted pension from Louis Philippe.

**Baretti**, GIUSEPPE MARCO ANTONIO (1719–89), Ital. critic; settled in London, and was associated with Dr. Johnson and the Thrales (*Boswell's Life*); became secretary to Royal Academy of Painting; wrote on Shakespeare and other authors, and compiled a *Dictionary and Grammar of the Italian Language*.

**Barfleur**, seapt., bathing resort, Normandy (49° 41' N., 1° 16' W.); *White Ship* wrecked outside harbour (1120); important port of communication between England and Normandy in Middle Ages.

**Barfod**, PAUL FREDERIK (1811–96), Dan. historian; sat in Folkething; strongly advocated a close Scandinavian unity; he wrote *Danmarks Historie*.

**Barfurush**. See BALFRUSH.

**Barga**, mt. vil., Italy (44° 4'

N., 10° 29' E.); church contains interesting late Romanesque pulpit. Pop. (comm.) 8,000.

**Bargain and Sale**, legal term for a contract by which real or personal property is transferred from one individual to another.

**Bargander**. See **SHELDRAKE**.

**Barga Pass**, important road over Himalayas, Punjab, India (31° 16' N., 78° 19' E.); alt. c. 15,000 ft.; the lowest of the three passes in the vicinity.

**Barge**, flat-bottomed boat used for conveying heavy and non-perishable freight on canals, and towed by a horse; on tidal waters they are sometimes fitted with sails; a 'lighter,' boat used for loading or unloading vessels; stationary house-boat like the Oxford college barges on the Isis; in earlier times a highly decorated craft used by kings and nobles.

**Barge**, tn., Piedmont, Italy (44° 44' N., 7° 19' E.); slate quarries; manufactory of arms. Pop. (comm.) 10,000.

**Bargeboard**, a piece of board, often ornamented, covering the roof timbers of a gable.

**Barham**, **SIR CHARLES MIDDLETON**, LORD (1726–1813), Brit. admiral; expert in higher strategy of war; first lord under Pitt (1805); was director of the Trafalgar campaign; battleship (completed 1915), engaged at Jutland, named after him.

**Barham**, **RICHARD HARRIS**, 'THOMAS INGOLDSBY' (1788–1845), Eng. humorist; educated St. Paul's School and Brasenose Coll., Oxford; clergyman and minor canon of St. Paul's; acquired (1837 onwards) lasting fame by his *Ingoldsby Legends*,

combining humour with much mediæval scholarship.

**Bar Harbor**, vil., Maine, U.S. (44° 20' N., 68° 15' W.); fashionable summer resort with large cottage colony. Pop. c. 2,000.

**Bar-Hebræus**, Latinized name of Abulfaraj (b. 1226), Bishop of Aleppo; wrote Syriac history of the world, and Bible commentary.

**Bari**, negro tribe, inhabiting neighbourhood of White Nile.

**Bari**. (1) Prov., S. Italy; fruit; salt industry; cattle and sheep pasturing. Area, 2,048 sq. m.; pop. 936,000. (2) Seapt. and archiepisc. see, cap. of above (41° 7' N., 16° 49' E.); cathedral (11th cent.); nautical school, arsenal; iron foundry; trade in wine, fruit, olive oil. Pop. 109,200.

**Bariatinski**, **ALEXANDER IVANOVICH**, PRINCE (1814–79), Russian general; served in and was gov.-gen. of the Caucasus; captured Shamyl (1859).

**Bari Doab**, strip of country, Punjab, India (29° 22'–32° 30' N., 71° 6'–75° 58' E.); irrigation canal, completed 1879.

**Barili**, tn., Cebu, Philippines (10° 10' N., 123° 30' E.); important fisheries; silk fabrics, hemp, cotton. Pop. 31,600.

**Barilla**, an impure carbonate of soda obtained by burning plants grown in salt marshes or on sea coast; formerly widely used method, but now practically abandoned.

**Baring**, family of Eng. financiers and bankers; firm of Baring Bros. (1770–1890), first banking house in Europe; members of the family have been prominent statesmen, and obtained respectively baronies of Ashburton, Northbrook (afterwards made an

earldom), Revelstoke, and earldom of CROMER.

**Baring**, HON. MAURICE (1874—), Eng. author and journalist; son of 1st Lord Revelstoke; in diplomatic service (1898–1904); major in R.A.F. and personal secretary to General Trenchard, chief of Air Staff (1918); has written much on Russian literature and Russian people, besides plays and poems.

**Baring-Gould**, REV. SABINE (1834—), Eng. author and clergyman; writer of numerous novels, hymns, religious and antiquarian works.

**Baringo**. (1) Dist., Uganda, British E. Africa; grain. (2) Lake in dist. ( $0^{\circ} 40' \text{ N.}$ ,  $36^{\circ} 10' \text{ E.}$ ); alt. 3,300 ft.; first visited by Joseph Thomson (1883).

**Barisal**, tn., Bengal, India ( $22^{\circ} 42' \text{ N.}$ ,  $90^{\circ} 22' \text{ E.}$ ); on w. bank of Barisal R.; centre of river trade; college; 'Barisal guns,' unexplained natural phenomenon associated with the rising tide. Pop. 19,000.

**Barite**. See BARYTES.

**Barium** ( $\text{Ba}=137.37$ ), metallic element belonging to alkaline earths; of silver lustre, oxidizes readily, reacts with water and alcohol; occurs chiefly as barytes and witherite; spectrum shows two characteristic green lines. Technically important derivatives are barium sulphate ( $\text{BaSO}_4$ ), used as pigment under name 'blanc fixe'; barium nitrate, employed in explosives and fireworks; barium peroxide ( $\text{BaO}_2$ ), used in production of hydrogen peroxide.

**Bar-Jesus**, Jewish sorcerer smitten with blindness for opposing Paul at Paphos (Acts 13); probably a professional magician.

**Bark**, all the tissues in a stem outside the cork cambium or phellogen (see CORK); tissue dies being cut off from food supply; first phellogen disappears and is replaced by second, deeper lying; thus bark increases in thickness; certain varieties of commercial and medicinal importance—e.g., Peruvian or cinchona barks, from which quinine is prepared.

**Bark**, P. L., Russian bank director and minister of finance (1914–17); suggested pooling of Allied resources at Paris finance conference (1915), which was decided upon; an advocate of prohibition as means of increasing national savings; regarded by Allied statesmen as a capable minister of finance.

**Barka**, or BARCA, E. div. of Tripoli, N. Africa ( $30^{\circ} 50' \text{ N.}$ ,  $22^{\circ} 40' \text{ E.}$ ), consists of elevated plateau projecting into Mediterranean, to s. a series of depressions, and then land rising into a desert plateau; traversed by caravan tracks; many oases; coast region might be developed; fairly good harbours (Barka, Derna, Bengasi); ruins of various cities (Arsinoë, Cyrene, etc.); was Gr. Cyrenaica. After war of 1911, Tripoli became Italian, but Turk. troops remained in Barka, a reason for Italy entering Great War. (See SENUSSI.) Area, c. 70,000 sq. m.; pop. c. 300,000.

**Bark-bound**, horticultural term; symptom, exuding of gum; caused by overrichness of soil or stagnation; remedy, thorough drainage and scrubbing of stem.

**Barker**, HARLEY GRANVILLE (1877—), actor, playwright, and theatrical manager; belongs to Bernard Shaw and Galsworthy

school of dramatists; remarkable for faithfulness to actuality, and combination of literary criticism and realism in dialogue; wrote *The Madras House*, *The Voysey Inheritance*, etc.

**Barker**, WILLIAM GEORGE, Canadian airman; major, R.A.F.; hero of many dramatic episodes during Great War; credited with a bag of fifty enemy planes: awarded v.c.

**Barker's Mill**, hydraulic engine named after its inventor, worked by reaction of water issuing from small holes in a cross-piece which is rotated in opposite direction.

**Barking**, mrkt. tn. and urban dist., Essex, England (51° 33' N., 0° 5' E.); Norman church; rubber, chemical, and match works. Pop. 38,000.

**Barkla**, CHARLES GLOVER (1877– ), prof. of Natural Philosophy Univ. of Edinburgh since 1913; Nobel prizeman in physics (1917); has written on electric waves, X-rays, and secondary rays.

**Barkly**, SIR HENRY (1815–98), Brit. governor of Brit. Guiana, Jamaica, Victoria, Mauritius, and Cape Province (1870–77) successively; the towns and districts of Barkly E. and W. were named after him.

**Barkly East**, tn., cap. of sheep-farming dist., Cape Province, S. Africa (30° 58' S., 27° 36' E.); elevation nearly 6,000 ft. Pop., dist. 8,000; tn. 1,638.

**Barkly West**, tn., cap. of dist. of same name, Griqualand W., S. Africa; diamonds. Pop. 1,000.

**Barlaam and Josaphat**, Christianized version of legendary life of the Buddha, first appearing in Greek in writings of John of Damascus, a Syrian monk of 8th

cent. who lived at the court of Abū Jafar-al-Mansūr.

**Barlad**. See BERLAD.

**Bar-le-Duc**, tn., dep. Meuse, France (48° 47' N., 5° 8' E.); old cap. of duchy of Bar; birthplace of great Duke of Guise and Marshal Oudinot; preserves, cotton, hosiery. Pop. 17,000.

**Barletta**, seapt. tn., Bari, Italy (41° 19' N., 16° 17' E.); good harbour; wine, tartar, sulphur, and salt. Pop. 41,000.

**Barley** (*Hordeum sativum*), important hardy cereal including numerous sub-species, cultivated from anc. times in every part of the world for food, fodder, malting, and brewing. Under fair conditions one peck may yield about 4½ bushels (each 56 lb.). Barley is liable to same parasitic diseases as wheat. The four chief varieties are *H. vulgare*, *H. intermedium*, *H. distichum*, and *H. deficiens*. The chief forms are two-rowed and six-rowed barleys, the first containing the best brewing barleys.

**Barley-break**, old Eng. country game, played by three persons of each sex in couples, placed in three positions close to one another, the middle couple trying to catch the others, who, when caught, were put in the middle position, or *hell*. The game is still played in Cumberland as *barley-brigs* and in Aberdeenshire as *barla-braks*.

**Barleycorn**, formerly barley grains, a measure of length = ⅓ in.; malt liquor, personified in Burns's song, 'John Barleycorn.'

**Barley Midge**, small two-winged fly; similar to Hessian fly and wheat fly; larvæ attacks growing barley.

**Barlow, JANE** (1860–1917), Irish novelist; her sketches of Irish peasant life are remarkable for sympathetic and truthful description; authoress of *Bogland Studies*, *Irish Idylls*, *A Creel of Irish Stories*, etc.

**Barlow, SIR THOMAS** (1845– ), Eng. physician; is physician-extraordinary to his Majesty, having held same post under Queen Victoria and King Edward VII.; president Royal Coll. of Physicians (1910); created Bart. 1901, and K.C.V.O. (1902).

**Barlow, WILLIAM HENRY** (1812–1902), Eng. civil engineer, son of PETER BARLOW (1776–1862), Eng. mathematician; consulting engineer Midland Ry. (1857); was consulted about construction of Tay Bridge (1887) and Forth Bridge; president Institution of Civil Engineers (1879–80).

**Barm** (yeast). See BREWING.

**Barmecides**, historic Persian family founded by Barmek, of great influence under Abbaside caliphs of Bagdad; one of its members was vizier under Haroun-al-Raschid (786); they were obnoxious to Arabs as Persians and freethinkers. A *Barmecide feast* signifies a visionary banquet; term derived from story in *Arabian Nights*.

**Barmen**, manufacturing tn., dist. Düsseldorf, Prussia (51° 17' N., 7° 11' E.); weaving, button making, dyeing, calico printing, etc. Pop. 169,200.

**Barmouth**, wat.-pl., Merioneth, Wales (52° 44' N., 4° 3' W.), on beautiful Mawddach estuary; old town built on side of steep hill. Pop. 2,100.

**Barn.** See FARM AND FARM BUILDINGS.

**Barnabas** ('son of consolation,' so called by the Apostles), the Apostle, was a Levite of Cyprus named Joses, who sold his land and gave the money to the Apostles. He was the uncle of Mark. Barnabas championed Paul, after the latter's conversion; was sent to Antioch; accompanied Paul on his first missionary journey; returned to Antioch and sailed with Mark to Cyprus, where he is said to have died as a martyr. The apocryphal Epistle of Barnabas is found in the *Codex Sinaiticus*, and Clement of Alexandria (200) frequently quotes it and attributes it erroneously to Barnabas. It deals with the attitude of the Church towards the Jewish law, in an anti-Judaistic spirit. Har-nack gives its date as about 130.

**Barnabites**, religious order of 'Regular Clerks of St. Paul,' founded in Milan (1530); they were so named from place of assembly, church of St. Barnabas.

**Barnaby, SIR NATHANIEL** (1829–1915), Brit. naval architect; was chief naval architect and director of naval construction (1870–85), and one of founders of Institute of Naval Architects; author of many books on the subject; knighted in 1895.

**Barnacle**, a crustacean which attaches itself to objects floating in the sea. See ENTOMOSTRACA.

**Barnacle** (or BERNICLE) **Goose**, bird which breeds in Spitzbergen and Greenland; body white, head black, wings grey.

**Barnard, LADY ANNE** (1750–1825), Scot. poetess; daughter of 5th Earl of Balcarres; married Andrew Barnard, colonial secretary at Cape of Good Hope. She



is chiefly remembered for her ballad, 'Auld Robin Gray,' written 1772 (pub. anonymously, 1783; authorship admitted to Sir Walter Scott, 1823), also for her *Letters* from the Cape.

**Barnard, CHARLOTTE ALINGTON.** See CLARIBEL.

**Barnard, EDWARD EMERSON** (1857– ), Amer. astronomer; discovered Jupiter's fifth satellite in 1892 with 36 in. Lick telescope.

**Barnard Castle, mrkt. tn., co. Durham, England** (54° 32' N., 1° 55' W.); ruins of Castle Barnard; birthplace of John Balliol; scene of Scott's *Rokeby*; Bowes Museum; flax thread. Pop. 4,800.

**Barnardiston, NATHANIEL WALTER** (1858–1919), Brit. soldier; commanded Brit. forces during attack on Tsing-tau (1914).

**Barnardo, THOMAS JOHN** (1845–1905), Irish philanthropist; opened 'Dr. Barnardo's Home,' at Stepney (1867), to shelter and train homeless children; and afterwards established 111 similar refuges, besides village home at Barkingside for girls.

**Barnato, BARNETT ISAACS** (1852–97), S. African diamond merchant; built up Barnato Diamond Mining Co. at Kimberley, ultimately amalgamated with De Beers group; committed suicide at sea.

**Barnaul, tn., Siberia** (53° 20' N., 83° 48' E.); butter, bacon; smelting furnaces. Pop. 61,300.

**Barnburners, faction of Amer. democratic party, so named** (c. 1844) from drastic measures advocated to bring about reform.

**Barnby, SIR JOSEPH** (1838–96), Eng. composer and conductor; head of Guildhall School of Music (1892); works include

*Rebekah*, an oratorio, anthems, songs, and many hymn tunes.

**Barnes, RT. HON. GEORGE** (1859– ), Brit. statesman; began life as working engineer; entered Parliament (1906); supported government from beginning of Great War; became first minister of pensions (1916); Labour minister in war cabinet (1917); Brit. representative of labour at the Peace Conference; attended as vice-president first International Labour Conference at Washington (1919). Resigned from government (Jan. 1920).

**Barnes, THOMAS** (c. 1786–1841), sometime editor of *Times*, which, under his guidance, attained commanding position in journalism; vigorous supporter of the Reform Bill.

**Barnes, WILLIAM** (1800–86), Dorsetshire poet, was successively lawyer's clerk, schoolmaster, and clergyman; pub. *Poems of Rural Life in the Dorset Dialect* (1844), *Homely Rhymes* (1859), *Poems of Rural Life in Common English* (1868), etc. His poems are exquisitely finished idylls.

**Barnet, dist. and mrkt. tn., Hertfordshire, England** (51° 39' N., 0° 2' W.); scene of battle (1471) in Wars of Roses, where 'Kingmaker' fell; obelisk erected (1740). Pop. 12,500.

**Barnett, JOHN FRANCIS** (1837–1916), Eng. composer; first cantata, *The Ancient Mariner*, appeared in 1867. Other works are *Paradise and the Peri* (1870), *Raising of Lazarus* (1876), *Eve of St. Agnes* (1914), etc.

**Barnett, SAMUEL AUGUSTUS** (1844–1913), Eng. clergyman and philanthropist; became canon of Bristol (1893) and of Westminster

(1906); but his life was chiefly devoted to amelioration of conditions in Whitechapel, where, assisted by Toynbee, he did noble work. At latter's death Toynbee Hall founded in his memory. Canon Barnett was deeply interested in Children's Country Holiday Fund, Pupil Teachers' Scholarship Fund, etc.

**Barneveld**, vil., Gelderland prov., Holland (52° 8' N., 5° 35' E.), 20 m. N.W. of Arnheim; manufactures paper; horse and cattle fairs. Pop. 9,300.

**Barneveldt**, JAN VAN OLDEN (1547-1619), Dutch statesman and patriot; as land advocate (1856) exercised great power; ensured succession of Maurice of Nassau as stadtholder (1584); brought about Treaty of Peace with Spain (1609); as Remonstrant was tried and executed.

*Life*, by Motley (1874).

**Barnfield**, RICHARD (1574-1627), Eng. poet and friend of Shakspere; wrote *The Affectionate Shepherd* (1594), *Cynthia* (1598), *Lady Pecunia* (1598), etc. Works collected by Dr. Grosart and Prof. Arber (1882).

**Barnsley**, par. and mrkt. tn., Yorkshire, England (53° 33' N., 1° 28' W.); coalfields, iron, steel, paper, boots. Pop. 55,000.

**Barnstaple**, seapt. and par., Devonshire, England (51° 5' N., 4° 3' W.), on Taw, spanned by 13th cent. bridge of sixteen arches; manufactures pottery (Barum ware). Pop. 14,500.

**Barnum**, PHINEAS TAYLOR (1810-91), Amer. showman; successfully toured with the dwarf 'General Tom Thumb' in U.S. and England (1842-4), and introduced Jenny Lind to the

Amer. public. In 1871, with Bailey, launched enterprise known as 'The Greatest Show on Earth,' with which he toured the world.

**Barocchio**, GIACOMO (1507-73), Ital. architect; under the patronage of Pope Julius III. he succeeded Michelangelo as the architect of St. Peter's (1564), and designed numerous other buildings in Rome; pub. *Five Orders of Architecture* (1563) and *Practical Perspective* (1583).

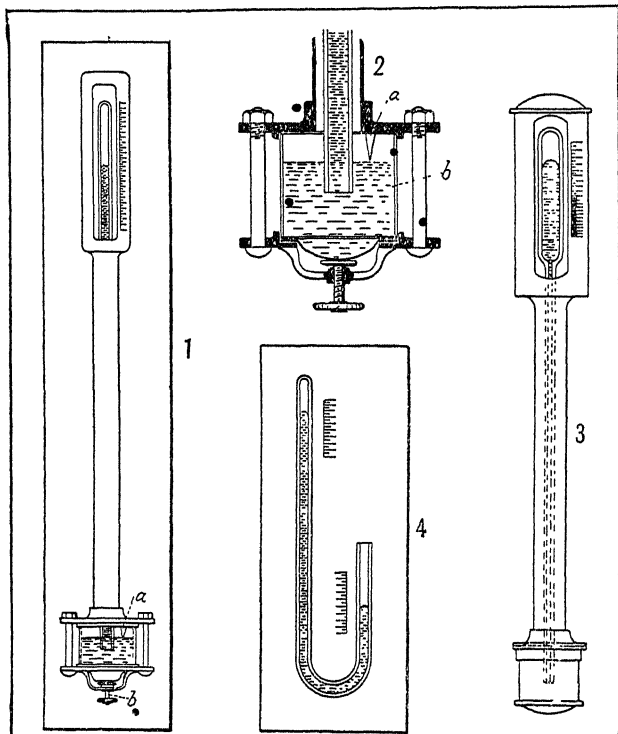
**Baroda**. (1) Feudatory state, Gujarat and Kathiawar, Bombay, India; produces food grains, cotton, sugar, tobacco, and opium (a state monopoly). Climate is tropical; vegetation rich and varied; wild animals include tiger, leopard, antelope, and monkey; manufactures coarse cotton cloth. Gaekwar is ruler under Brit. suzerainty. Area, 8,099 sq. m.; pop. 1,952,700. (2) Cap. of above state (22° 18' N., 73° 15' E.); progressive city with fine public buildings, palaces, offices, Hindu temples, etc. An Improvement Trust administers the city. Pop. 99,300.

**Baroda**, MAHARAJAH GAEKWAR SIR SAYAJI RAO III. (1863- ), descended from a distant branch of the family of Khande Rao, which stood by British during Mutiny. Invested with full powers (1881); regrettable incident at Delhi durbar caused his loyalty to be impugned; during Great War gave lac of rupees to Brit. Government for aeroplanes, and from 1916 onward 12,000 rupees a month for purposes of war. He is one of the most progressive rulers in India, and has also published several books. The maharanee has

written *The Position of Women in Indian Life*.

**Barograph**, a self-registering barometer, giving a continuous

Galileo's observation that water ordinarily rises in a pump to a height of about 34 ft. induced Torricelli to prove experimentally



*Barometers.*

1. Fortin Barometer 2. Lower part enlarged. *a*, ivory pin; *b*, adjusting screw. 3. Kew Barometer. 4. Siphon Barometer.

automatic record of pressure changes on a revolving drum driven by clockwork.

**Barometer**, instrument for measuring atmospheric pressure.

that the atmosphere has weight. He demonstrated that mercury, filling a tube 3 ft. long sealed at one end, when inverted in a basin containing the same fluid, sank

to a level of about 30 in. above that of the mercury in the basin, a vacuum being left at the top of the tube. Subsequently, Pascal showed that the level of the mercury varied in different altitudes and in different weather, thus making Torricelli's appliance, provided with a scale, known as a *weather glass* and an instrument for determining altitudes.\* In the so-called *cistern barometer* the mercury level in the basin naturally varies with the level in the tube, rendering the exact observation of different pressures difficult owing to this 'error of capacity.' This is obviated in the *Fortin barometer* by a screw, by means of which the mercury in the cistern can be adjusted to a standard level indicated by an ivory point. See ANEROID.

Marvin, *Barometers and the Measurement of Atmospheric Pressure* (1901); J. Bartholomew, *Atlas of Meteorology*.

**Baron.** In early times in England the word was used to distinguish a person who held lands of the sovereign; it was not in any sense a title. It was first employed as a title by Richard II., who in 1387 created John de Beauchamp baron of Kidderminster. Henry VI. was the first king to create a number of barons. Charles II. gave barons a coronet. The title, which is hereditary to the heirs-male, is the lowest in the peerage. The children of a baron are addressed as 'the honourable.' Scottish and Irish barons only sit in Lords when elected by their order as representative peers.

**Baron and Femme.** Norman-Fr. expression incorporated into

Eng. law, and signifying husband and wife. In heraldry the words denote the bearing by which the arms of husband and wife are marshalled side by side on same shield, husband's on dexter side.

**Baronet**, title of anc. date, originally applied to minor barons. The existing baronetage of England was instituted by James I. (1611), that of Ireland in 1619. The sovereign's objects in creating the order were to promote the plantation of Ulster and to raise money. Each baronet had to pay £1,080 as fees of honour. Charles I. created a Scot. degree of baronets for promoting colonization of Nova Scotia. Each baronet received grants of land in that colony, with ample powers of jurisdiction. Baronets are entitled to prefix Sir to their Christian name, and add Bart.; they take precedence after younger sons of barons. All new baronets are now created baronets of U.K. Method of creation is by royal letters patent.

**Barons' War**, THE (1263-7). See MONTFORT, SIMON DE.

**Barony** denotes either the state and dignity of a baron or his domain. See BARON.

**Baroque**, a term first applied to ill-shaped pearls, now denotes fantastic, bizarre, and decadent forms in art and in nature.

**Barosma**, small evergreen shrub of S. Africa; used as perfume and medicinally for wounds.

**Barotseland**, dist., N.W. Rhodesia (15° 25' S., 25° E.); inhabited by Bantu race.

**Barque**, three-masted ship, square-rigged on the fore and main masts, and fore-and-aft on the mizzen. A *barquentine*

differs from a barque in being only square-rigged on foremast.

**Barquisimeto**, cap., prov. Lara, Venezuela (9° 55' N., 69° 15' W.); produces wheat, coffee, cocoa, sugar, beans, and fibre; connected with its port, Tucacas, by the Bolivar Ry. Pop. 31,000.

**Barr**, AMELIA EDITH (1831- ), Eng. novelist, went with husband to U.S., where she wrote novels, including *Jan Vedder's Wife* (1885), *Trinity Bells* (1899), *The Maid of Maiden Lane* (1900), *The Black Shilling* (1904), and *The House on Cherry Street* (1909).

**Barr**, ARCHIBALD (1855- ), Scot. engineer and inventor, was prof. of civil engineering at Leeds and at Glasgow (till 1913); chairman of Barr and Stroud, Ltd., Anniesland, Glasgow, which firm manufactures his numerous inventions, including fortress and field service and naval range-finders, electrical fire-control instruments for warships, etc.; has recently invented the OPTOPHONE, for enabling the blind to read books by sound.

**Barr**, ROBERT (1850-1912), Scot. novelist, was schoolmaster at Windsor, Canada, and later became journalist at Detroit. Returned to England (1881), and with Jerome K. Jerome founded the *Idler* (1892). Works include *Over the Border* (1903), *Cardillac* (1909), *The Swordmaker* (1910).

**Barra**. (1) Tn. and health resort, Italy (40° 50' N., 14° 18' E.), 4 m. E. of Naples. Pop. 12,000. (2) Isl. and par., Inverness-shire, Scotland (57° N., 7° 30' W.); fisheries; chief harbour, Castlebay. Pop. 2,600.

**Barrackpur**, tn., Bengal, India (22° 46' N., 88° 21' E.); known

to natives as Charnock, after name of founder of Calcutta, Job Charnock. Pop. 39,000.

**Barracks** (from Fr. *barraque*, 'a long wooden shed'), a word originally applied to huts of standing camps. Until reign of George III., troops were lodged in billets, often inns and public-houses, and barracks were built to get rid of demoralizing results of this system. At first these were kept in repair by Royal Engineers, but they are now in charge of a special department of the War Office. Until recently men in barracks lived twenty or thirty in a room, in which they also had their meals; but a large dining hall now always forms part of the building. The modern barrack includes a large number of departments, not always under the same roof, but installed in a number of buildings adjoining regimental parade ground. These comprise cook-house, men's quarters, officers' mess and quarters, sergeants' mess, orderly room, and company offices. The orderly room is the commanding officer's office, which is in charge of the adjutant, while the administrative work of company commanders is carried on in the company offices. There is also a regimental institute, which includes wet and dry canteens (bar and grocery store), reading and recreation rooms, a library, and sometimes even a small theatre or concert hall. Married quarters are provided for men married on the strength of the regiment, and there are also wash-houses, lavatories, baths, etc. In every barrack there is a guardroom

for defaulters, drill and store sheds, a Morris-tube range and gymnasium, and for cavalry and artillery a long range of stables. In modern barracks, as at Redford, near Edinburgh, a separate cubicle is provided for each man. Troops in India are accommodated in cantonments, which are placed at some distance from the native city.

**Barraconda.** See GAMBIA.

**Barracouta**, or BARRACUDA, fish of tropical and sub-tropical regions which attacks man.

**Barrafranca**, tn., prov. Caltanissetta, Sicily (37° 22' N., 14° 11' E.); alt. 1,470 ft. Pop. 11,000.

**Barrage**, artillery term, meaning a barrier of gun fire from heavy artillery and machine guns, called by French *feu de barrage*, and by British 'curtain fire.' Method was invented by French during Great War, and employed by them (1) between opposing trenches, to stop enemy attack; (2) in the rear and flank of objective, to isolate defenders in an attack and prevent reinforcements coming up. This method was used by British in battle of the Somme (July to Sept. 1916), but afterwards for purposes of attack was combined with the 'creeping barrage' devised chiefly by General Sir Henry (now Baron) Horne. Formerly the artillery had played upon line after line of enemy trenches, missing the rifle and machine-gun posts hidden between these, which were responsible for many casualties. In the new 'creeping barrage' no ground was neglected. In an attack the artillery started by bursting their shells about 150 yds. in front of their own lines,

gradually advancing at a pace regulated by the infantryman's rate of progression. The system gave excellent results, and the men soon learned to follow the barrage closely. In the later stages of the war, when field guns were left behind temporarily owing to rapid advance, the machine-gun barrage at long ranges was brought to a pitch of considerable accuracy.

**Barra Mansa**, tn., Brazil (22° 5' S., 43° 49' W.); coffee and sugar; iron, manganese, and plumbago. Pop. 16,000.

**Barranquilla**, port on riv. Magdalena, Colombia (10° 58' N., 74° 55' W.); cotton, coffee, tobacco, bananas. Pop. 35,000.

**Barrantes**, VICENTE (1829-98), Span. publicist and author, wrote poems, satires, novels, history, etc.; member of Span. Academy.

**Barras**, PAUL FRANÇOIS JEAN NICOLAS, VICOMTE DE (1755-1829), Fr. Jacobin statesman; brought about fall of Robespierre, and had a share in early advancement of Bonaparte; was removed largely through Bonaparte's influence. Wrote *Mémoires*.

**Barratry**, fraudulent act wilfully committed by the master of a ship, such as scuttling, breach of revenue laws, etc., or by the crew, such as mutiny, wilful damage to the ship, etc.; common barratry, the habitual stirring up of quarrels and lawsuits, now practically obsolete offence; formerly in civil law denoted judicial corruption, and in canon law a form of simony.

**Barratt**, REGINALD (1861-1917), Eng. artist, chiefly water-colour; famous for perfection of draughtmanship; amongst

other works he painted *Courtyard of the Ducal Palace, Venice* (Manchester Corporation Gallery), *The Abbey Middelburg*, etc.

**Barré**, ISAAC (1726-1802), Brit. soldier of Fr. extraction; fought under Wolfe at Quebec; held office under Bute, Pitt, and Shelburne; fiercely opposed the taxing of the American colonies.

**Barrel**, of wine, 31½ gal.; ale, 36 gal.; flour, 196 lb.; butter, 224 lb.; pork or beef, 200 lb. Dry barrel not a legalized measure; quantities must be stated in pounds or bushels.

**Barrel Organ**, mechanical organ, played by turning a handle. This handle turns a wooden cylinder set with pins which raise the keys, thus admitting air from the wind-chest. Originally known as 'the Dutch organ,' the barrel organ was first made in the Netherlands during the 15th cent. It is now largely replaced by piano organ.

**Barrenwort**, common name for *Epimedium*, a genus of about a dozen species of alpine herbs of the barberry family; found in temperate regions of Old World; leaves bitter, formerly used as a sudorific.

**Barrès**, MAURICE (1862- ), Fr. novelist, publicist, and deputy, member of the Fr. Academy; an individualist, his works teach the importance of patriotism, and the inspiration of national history; did excellent work during Great War by inspiring addresses to Fr. and Brit. audiences, and wrote an excellent diary of the war (Aug. to Oct. 1914); author of *Le Jardin de Bérénice*, *Colette Baudoche*, the political trilogy *Le Roman de*

*l'Energie nationale: Les Déracinés*, *L'Appel au Soldat, Leurs Figures*.

**Barrett**, ELIZABETH. See BROWNING.

**Barrett**, LAWRENCE (1831-91), Amer. actor; after Edwin Booth the leading Amer. actor of his day; greatest in part of Cassius; served with distinction in Civil War. He wrote lives of Edwin Booth and Edwin Forrest.

**Barrett**, SIR WILLIAM FLETCHER (1844- ), Brit. scientist; assistant to Prof. Tyndall; prof. of physics, Royal Coll. of Science, Dublin (1873-1910); principal founder and past president of Soc. for Psychical Research.

**Barrett**, WILSON (1846-1904), Eng. actor and dramatist; established his reputation as an exponent of emotional drama in *The Silver King*; one of his own plays, *The Sign of the Cross*, had an enormous vogue in its day.

**Barrhead**, par. and tn., Renfrewshire, Scotland (55° 48' N., 4° 23' W.); shawl and calico weaving; wool skinning; iron and brass working. Pop. 11,500.

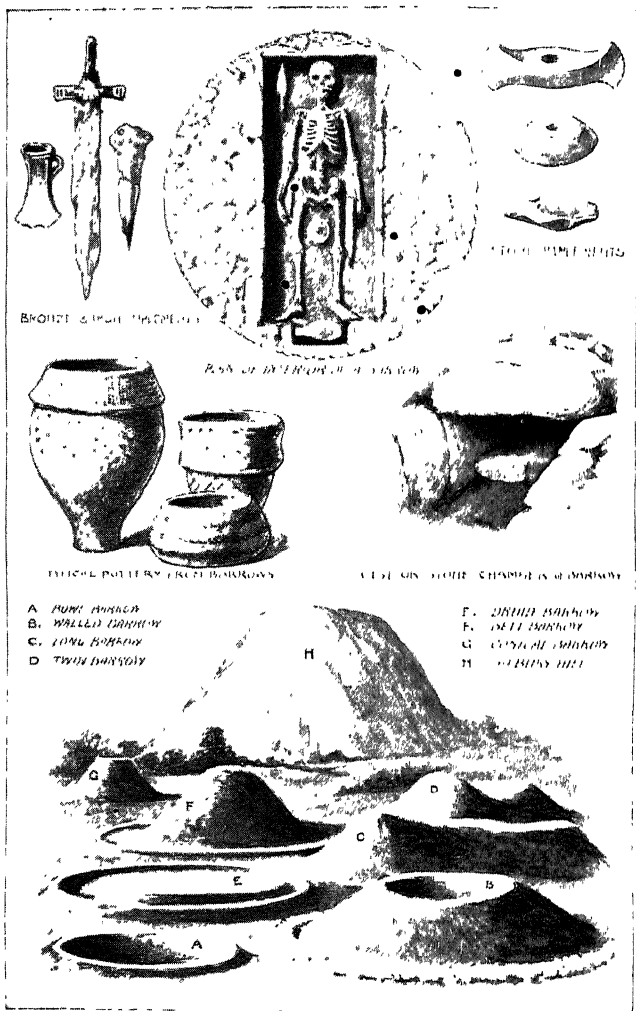
**Barrias**. (1) FÉLIX JOSEPH (1822-1907), Fr. historical painter. (2) LOUIS ERNEST (1841-1905), Fr. sculptor; besides monuments has done groups on class. subjects; noted for strength and simplicity of handling.

**Barricades**, hastily improvised barriers composed of paving stones, wagons, trees, or other suitable materials thrown up as obstacles in street fighting. Raising barricades was the favourite Parisian method of commencing insurrection. *Chief Days of the Barricades*—May 12, 1588, used by League with a view to deposing Henry III. in favour of



BRITISH SOLDIERS ADVANCING UNDER AN ARTILLERY BARRAGE.





SEPULCHRAL BARROWS AND THEIR CONTENTS.

Duke of Guise; Aug. 27, 1648, first important manifesto of Fronde; during revolutions of 1830, 1848, and 1871. Barricades were used by Sinn Feiners in Dublin (1916), and repeatedly by Belgians during Ger. invasion of Belgium (1914).

**Barrie**, tn., Ontario, Canada (44° 26' N., 79° 42' W.); boat and coach building; stoves, leather goods, woollens. Pop. 6,400.

**Barrie**, SIR JAMES MATTHEW (1860—), Scot. novelist and dramatist; b. Kirriemuir; made his reputation with sketches and novels of Scot. life, *A Window in Thrums* (1889), *The Little Minister* (1891), etc., and plays of a delicate fancy and whimsical satire—e.g., *The Admirable Crichton* and *Quality Street* (1903), the former perhaps the finest comedy of recent days; *Peter Pan* (1904); *What Every Woman Knows* (1908); *Der Tag* (1914), a dramatic piece touching on the war; *Dear Brutus* (1918); *Echoes of the War* (1918); *Mary Rose* (1920), etc. Created baronet in 1913; elected lord rector of St. Andrews Univ. (1919).

**Barrier Act** (1697) provides that every important measure passed by General Assembly of Church of Scotland must be remitted to presbyteries, and only put into operation if a majority of these decide in its favour.

**Barrière**, THÉODORE (1823–77), Fr. dramatist; popularized, if he did not invent, character of *raisonneur* or moralizing chorus; produced *Manon Lescaut*, etc.

**Barrier Reef**. See GREAT BARRIER REEF.

**Barrili**, ANTONIO GIULIO (1836–1908), Ital. writer; wrote more than fifty novels, marked by

absence of realism and modern problems; one of most popular of Ital. novelists.

**Barring-out**, act of rebellion amongst schoolboys, which consisted of excluding the master from the school premises. A notable instance took place at Edinburgh High School (1595), when Bailie Macmorran was shot dead by one of the boys.

**Barrington**, GEORGE (1755–c. 1840), Irish author and pick-pocket, after an extraordinary career of crime was transported to Botany Bay. On voyage discovered and disclosed conspiracy to seize ship, and for this was recommended to governor of penal settlement. In 1792 obtained first warrant of emancipation ever issued. Works include *A Voyage to Botany Bay* (1801), *History of New Holland* (1808), etc. Author of the oft-quoted line, 'We left our country for our country's good.'

**Barrington**, JOHN SHUTE, 1ST VISCOUNT (1678–1734), Eng. polemical and theological writer, was instrumental in obtaining Scot. Presb. support for union of the two kingdoms. Gained favour of George I. by his *Dissuasive from Jacobitism*. Baron and viscount in Ireland (1720). Represented Berwick-on-Tweed (1715–22), but was expelled House for connection with lottery.

**Barrington**, SAMUEL (1729–1800), Brit. admiral, gained distinction during Seven Years' War.

**Barrington**, WILLIAM WILDMAN SHUTE, 2ND VISCOUNT (1717–93), Eng. statesman, son of 1st viscount; entered Parliament (1740); was chancellor of the exchequer (1761) and secretary of war (1765).

**Barrios, JUSTO RUFINO** (1835–85), president of Guatemala (1873–85); he rose to supreme military command under President Granados. Killed in war while invading San Salvador.

**Barrister**, a legal practitioner qualified to plead in the higher law courts of England, who must be a member of one of the four Inns of Court. To become a barrister a candidate has to pass a general examination, to pay certain fees, and to keep twelve terms by eating dinners at one of the Inns, when, after further examination, it rests with the benchers of the Inn to call him to the bar. The regular period of study is three years, and the total fees amount to about £150. When a barrister is made a king's counsel (not less than ten years after being called) he is said to 'take silk,' and is then debarred by etiquette from undertaking certain minor forms of legal work. A barrister's fees are strictly honoraria, and cannot be sued for. In Scotland a barrister is known by the title of **ADVOCATE**. Women are now admitted to qualify for practice at the bar.

**Barros, JOÃO DE** (1496–1570), Port. historian, the 'Livy of Portugal'; famed for his *Decades*, a monumental work on history of Portuguese in India, which inspired Camoens to write his *Os Lusíados*.

**Barrosa, vil.**, Spain (36° 20' N., 6° 11' W.), scene of Brit. victory over French under Victor (1811).

**Barros-Arana, DIEGO** (1824–), Chilean historian; pub. *Hist. of Chilean Independence* (1854–8), *Hist. of the War of the Pacific*

(1881), and *General Hist. of Chile* (12 vols. 1884–93).

**Barrow**, riv., Leinster, Ireland, joins Suir (52° 16' N., 7° W.), forming as its estuary Waterford Harbour. Length, 119 m.

**Barrow, ISAAC** (1630–77), Eng. mathematician and divine, was first Lucasian prof. of maths. at Cambridge (1663), but took to the d. (1664) and gave up his chair to his pupil Isaac Newton; master of Trinity Coll. (1672); vice-chancellor (1675); was a remarkable though extremely long-winded preacher.

**Barrow, SIR JOHN** (1764–1848), Eng. statesman, secretary to the Admiralty for forty years; was in China and S. Africa as secretary to Lord Macartney. Remembered for his services in promoting Arctic exploration, and as practical founder of Royal Geographical Society. Publications: *Travels in South Africa* (1801–4), *Travels in China* (1804), etc.

**Barrow-in-Furness**, seapt. and manufacturing centre, Lancashire, England (54° 7' N., 3° 13' W.). Since the discovery of pure hæmatite iron ore in vicinity it has made rapid progress. Huge steel and iron works, engineering shops, foundries, jute and flax factories, paper and pulp works; copper is found and slate is quarried. Great ship-building and naval armament works of Vickers are at Barrow. Furness Abbey is near. Docks, 280 ac. Pop. 80,000.

**Barrows** (A.S. *beorh*, 'a little hill'), sepulchral mounds which are found throughout Europe and in many other parts of the world. In the Brit. Isles they are either round or oval in shape, and are

formed of a stone-built inner chamber covered with earth, or sometimes of earth alone. In other instances they consist entirely of stone, several uprights supporting a huge capstone; those in England are known as *cromlechs*, and in Brittany as *dolmens*. Sometimes the human remains were burned, and the ashes deposited in urns; but often actual bodies were buried, together with arms, drinking vessels, and domestic animals belonging to the deceased. The barrows of the Viking age were frequently very large, and it seems to have been a common custom to bury a warrior aboard his ship. The Gokstad ship, discovered in a burial mound in 1880, and now in the Christiania Museum, is 78 ft. long, while the barrow also contained the remains of a dozen horses, besides numerous other animals, weapons, etc.

Greenwell, *Brit. Barrows* (1877).

**Barrow-upon-Soar**, par., Leicestershire, England (52° 46' N., 1° 9' W.): manufactures cement, boots, shoes, gloves, hosiery, and lace. Pop. 2,600.

**Barrulet**, in heraldry a diminutive bar, generally one-fourth of a bar in width.

**Barry**, in heraldry, term used when the field is divided by horizontal lines into an even number of equal portions.

**Barry**. (1) Seapt., Glamorgan, S. Wales (51° 24' N., 3° 16' W.); has docks capable of accommodating largest vessels afloat; important outlet for S. Wales coalfield. Pop. 36,500. (2) Coast par. and vil., Forfarshire, Scotland. Before Great War Barry

Links formed training ground and annual camp of artillery and Territorial forces. Pop. 4,900.

**Barry**, SIR CHARLES (1795–1860), architect of Houses of Parliament and many other beautiful structures throughout the country; knighted 1852; buried in Westminster Abbey.

**Barry**, ELIZABETH (1658–1713), Eng. actress, who created many parts, both in tragedy and comedy, and shone particularly in Otway's plays.

**Barry**, JAMES (1741–1806), Irish artist, whose most important work was the decoration of hall of Society of Arts with six pictures representing *Human Culture*; prof. of painting to Royal Academy (1784–99).

**Barry**, SIR JOHN WOLFE WOLFE- (1836–1918), civil engineer; was constructor of Kew, Blackfriars, and Tower Bridges, of docks at Middlesbrough, Newport, and Barry, and many other important works.

**Barry**, SIR REDMOND (1813–80), Australian judge of Irish birth; solicitor-general for Victoria, and afterwards judge; first chancellor of Melbourne Univ., and founder of the city's public library.

**Barry**, SPRANGER (1719–77), Irish actor; b. Dublin; in leading Shakespearean rôles became a rival of Garrick, over whom, though inferior as an actor, he possessed the advantage of a tall and handsome person. His second wife, ANN STREET BARRY (d. 1801), was considered to be the superior of Mrs. Siddons in some characters.

**Barry Cornwall**. See PROCTER, BRYAN WALLER.

**Bars**, dist., Czecho-Slovakia, crossed about centre by 48° 30' N., 18° 30' E.; gold, silver, copper, iron, lead, antimony, cereals, wine. Area, 1,031 sq. m.; pop. 164,800.

**Barsi**, tn., Bombay, India (18° 4' N., 75° 41' E.); cotton and oil-seeds. Pop. 24,000.

**Bar-sur-Aube**, tn., dep. Aube, France (48° 14' N., 4° 42' E.); known since Roman times; flour milling and tanning; two fine 12th cent. churches. Pop. 4,500.

**Bart.**, or **Bt.**, Baronet.

**Bart, JEAN** (1651-1702), Fr. naval officer; son of a fisherman; first served in Dutch navy under de Ruyter, later entered Fr. service; by sheer force of character and bravery rose to highest rank; was ennobled, and defended by Louis XIV. from sneers of the courtiers. Name commemorated in a Fr. Dreadnought which did good service in the Mediterranean during the Great War.

**Bartas**, GUILLAUME DE SALUSTE, SIEUR DU (1544-90), Fr. Huguenot; author of great religious epic poem, *La Semaine, ou Création du Monde*.

**Bartels**, ADOLF (1862- ), Ger. journalist and author; ed. of Frankfort *Didaskalia*; author of *Dithmarscher*, etc.

**Bartenstein**, tn., E. Prussia (54° 15' N., 20° 49' E.); carriage building and potteries; trade in corn and live stock. Pop. 7,300.

**Bartet**, MADAME (1854- ), pseudonym of JEANNE JULIA REGNAULT, French tragédienne; justly celebrated for her fine impersonation of Andromaque, Bérénice, Iphigénie, etc.; joined Comédie Française (1879).

**Bartfa**, or **BARTFELD**, tn.,

Saros, Czecho-Slovakia (49° 19' N., 21° 17' E.); chalybeate waters; fine Gothic church; meeting-place of first Hungarian Prot. synod. Pop. 7,600.

**Barth**, HEINRICH (1821-65), Ger. explorer and writer of books of travel; accompanied Richardson on Brit. Government expedition to Western Sudan; his five vols. on his travels (new ed. 1890) is still the standard work on N. and Central Africa; prof. of geography, Berlin (1862).

**Barthélemy**, AUGUSTE MARSEILLE (1796-1867), Fr. poet; along with Méry wrote satires on the Bourbon monarchy, and, among other works, *Napoléon en Egypte*, and trans. of *Æneid*.

**Barthélemy**, JEAN JACQUES (1716-95), Fr. scholar; wrote *Voyage du Jeune Anacharsis en Grèce*, which embodied the best class. scholarship of the day.

**Barthélemy Saint - Hilaire**, JULES (1805-95), Fr. philosopher and republican statesman; author of a great annotated trans. of Aristotle and other works.

**Barthez**, PAUL JOSEPH (1734-1806), Fr. physician; prof. of med. and chancellor of univ. of Montpellier; his *Science de l'Homme* has been widely trans.

**Bartholdi**, FRÉDÉRIC AUGUSTE (1834-1904), Fr. sculptor; *Statue of Liberty* (New York harbour) and *Lion of Belfort* are among his best-known works.

**Bartholomé**, PAUL ALBERT (1848- ), Fr. painter and sculptor; beginning as a genre painter, he took to sculpture; chief work, *Monument aux Morts*, Père Lachaise, Paris.

**Bartholomew**, St., one of the twelve Apostles, said to be identi-

fied with Nathanael. He is traditionally reported to have been flayed alive and then crucified.

**Bartholomew, MASSACRE OF** ST. (Aug. 24, 1572), the name given to the wholesale slaughter of Huguenots in Paris, by order of Charles IX., which took place on St. Bartholomew's Day. The massacre was planned by the queen-mother, Catherine, who feared and hated the heir-presumptive to the throne, Henry of Navarre, the hope of the Protestants. The effect was to nerve and strengthen Protestantism. See FRANCE (*History*).

**Bartholomew, JOHN** (1831-93), Scottish cartographer; b. Edinburgh; founded the Edinburgh Geographical Institute, an organization of world-wide fame in cartographical work. His son, JOHN GEORGE BARTHOLOMEW (1860-1920), extended the business; received many medals for his maps and geographical zeal, and the degree of LL.D. from Edinburgh University.

**Bartholomew Fair**, fair held in Smithfield, London, on St. Bartholomew's Day (Aug. 24) from 1133 to 1855. At one time a vast national market, it gradually developed into a pleasure fair; described by Pepys (1668).

**Bartholomew's Hospital**, ST., Smithfield, London, was founded in 1123; the famous medical school (founded 1843) is attended by about 400 students; has 757 beds, and nearly 130,000 out-patients annually.

**Barthou, LOUIS** (1862- ), Fr. ex-minister and author. As minister of justice (1913) he helped to reveal the Caillaux scandals, and proposed the three

years' military service law. Author of *Vers la Victoire*, etc.

**Bartizan**, small overhanging turret, with loopholes and embrasures, projecting from an angle of tower or wall. Term first used by Sir Walter Scott.

**Bartlett, SIR ELLIS ASHMEAD** (1849-1902), was M.P. for Eye and Sheffield (Ecclesall div.); civil lord of the Admiralty; author of *Battlefields of Thessaly*.

**Bartlett, WILLIAM LEHMAN**. See BURDETT-COUTTS, WILLIAM.

**Bartoli, ADOLFO** (1833-94), Ital. author, wrote *Storia della Letteratura Italiana*, the first critical history of Ital. literature.

**Bartolini, LORENZO** (1777-1850), Ital. sculptor, the first to give vitality to the features of his busts, in place of the former tradition. His bust of his patron Napoleon is famous.

**Bartolommeo di Paghola, FRA** (1475-1517), Ital. painter, famous for his magnificent altar-pieces; he was the first to introduce the jointed lay-figure.

**Bartolozzi, FRANCESCO** (1725-1815), Ital. engraver, whose well-known works include *Clytie*, the *Virgin and Child* after Dolci, and engravings of pictures by Cipriani and Angelica Kauffmann.

**Barton, ANDREW** (d. 1511), Scot. naval hero, one of a famous family of seamen in the reign of James IV.; was instrumental in creating a Scot. navy.

**Barton, BERNARD** (1784-1849), the 'Quaker poet,' friend of Southey, Hogg, the Ettrick Shepherd, and Lamb; author of *Household Verses*, etc.

**Barton, CLARA** (1830-1912), Amer. philanthropist; nursed the wounded in the Civil War

and Franco-Prussian War; first president of Amer. Red Cross (1881); performed field duties during Span.-Amer. War and S. African War.

**Barton, Rt. Hon. Sir Edmund** (1849-1920), Australian statesman; speaker of New South Wales (1883-7); prime minister of Australia (1901-3); senior puisne judge of the High Court of Australia (1903); largely instrumental in securing the Federation Act of 1900.

**Barton, Elizabeth** (c. 1506-34), 'the maid of Kent,' who prophesied that if Henry VIII divorced Catherine he would cease to be king; found guilty of treason and executed.

**Barton, George Aaron** (1859-), Welsh-Canadian Quaker theologian; director American School of Oriental Study and Research in Palestine (1902-3); prof. Semitic languages Bryn Mawr Coll. since 1901; publications include *A Sketch of Semitic Origin* (1902), *A Year's Wanderings in Bible Lands* (1904), and works on Assyriology.

**Barton Beds**, Upper Eocene grey and brown fossiliferous clays, with sandy layers; quartzose sands used in glass making.

**Barton-upon-Humber**, urban dist. and mrkt. tn., Lincolnshire, England (53° 41' N., 0° 26' W.); pottery, bricks, rope, sailcloth; malting. Pop. 6,700.

**Barton-upon-Irwell**, par., township, and vil., Lancashire, England (53° 28' N., 2° 22' W.), 5½ m. W. of Manchester; here the Bridgewater Canal is carried over the Manchester Ship Canal by a large swing bridge. Pop. 4,000.

**Bartsch, Friedrich Karl**

(1832-88), Germanic and Romance scholar of Silesia; studied Provençal mss. of London, Oxford, and Paris; prof. of Romance philology, Heidelberg (1871); most valuable work, *Untersuchungen über das Nibelungenlied* (1865).

**Bartsia**, genus of sixty species, native in N. temperate regions, in tropical mountains, and in S. America, belonging to family Scrophulariaceæ. Three species are native in Britain; one is *B. odontites* (red Bartsia).

**Barttelot, Edmund Musgrove** (1859-88), Eng. soldier and explorer; served in Afghanistan and Egypt; present at Tell-el-Kebir (1882) and Suakin (1883); breveted major after Gordon Relief Expedition; finally joined H. M. Stanley's force for relief of Emin Pasha (1887); shot by an Arab (1888); subject of painful controversy on Stanley's return.

*Life*, by his brother (1890).

**Baru**, fibrous material obtained from leaves of E. Indian sago palm and used in place of wool for cushions, etc.

**Baruch, Apocalypse of**, consists of a 6th cent. Syriac ms. discovered by Ceriani in the Milan Library in 1866, of which he produced a Latin trans. Baruch is said to have been companion and secretary of Jeremiah, and his work includes the prayer of the captives in Babylon, a dissertation on wisdom, and songs celebrating the return from captivity.

Charles, *Apocalypse of Baruch* (1896).

**Baruch**, Book of, one of the Apocryphal books of the Bible, written perhaps in time of the

Maccabees; attached to it is the Epistle of Jeremy, denouncing idolatry; in general use till Prot. churches rejected its canonicity.

**Barugo**, coast town, Leyte, Philippines ( $11^{\circ} 15' N.$ ,  $124^{\circ} 50' E.$ ); hemp. Pop. 12,000.

**Barvas**, par., N. Lewis, Scotland ( $58^{\circ} 21' N.$ ,  $6^{\circ} 30' W.$ ); lochs and streams abound in fish; traces of pre-Reformation chapels and ruins. Area, 97,543 ac.; pop. 7,000.

**Barwood**, dyewood obtained from *Pterocarpus soyauxii*, leguminous tree of tropical W. Africa; red dye obtained from it is used to give tone to browns and as a basis in indigo.

**Barye**, ANTOINE LOUIS (1795–1875), great Fr. sculptor, chiefly animal; his *Lion Struggling with Serpent* (1832) and *Lion Resting* (1847) now in the Tuileries.

**Barytes** (HEAVY SPAR;  $BaSO_4$ ), orthorhombic mineral found in veins; form, diverse; colour, white, grey, pink, or colourless; sp. gr. 4.5; used as 'permanent white' pigment, as a filling for writing paper, and is the chief source of the barium compounds.

**Barytocalcite**,  $BaCa(CO_3)_2$ , monoclinic white transparent crystal, found only at Alston Moor, Cumberland, England.

**Basalt**, igneous (volcanic) rocks with dark cleavage surfaces, weathering to turbid shades; composition varied, chiefly felspars, olivine, augite, black hornblende, biotite, and nepheline, together with grains of magnetite; many are characterized by columnar jointing, producing picturesque conformations, of which Staffa and Giant's Causeway are well-known examples.

**Bascinet**, BASINET, or BASNET, light peaked helmet, worn with or without a movable front, in common use during reigns of Edward I., II., III., and Richard II.

**Base** (chem.), a compound which will unite with acids to form salts. All metallic oxides are bases, and are hence called *basic oxides* to distinguish them from non-metallic oxides, which, being acid-forming oxides, are called *acid oxides*.

**Base of Operations**, military term for region in which an army concentrates for its advance at the outset of the war, and generally also the region through which supplies are forwarded to it. For a Brit. army, the base of operations is the port or ports at which the expeditionary force is disembarked, though this base may be changed during the campaign through our command of the sea. Thus, in 1914, when Ger. invasion endangered the Channel ports, a new base was formed for the time being at ST. NAZAIRE, on the Atlantic coast of France. As the army pushes forward an advanced base is formed, which becomes the immediate source of supply for the fighting front.

**Base-ball**, national game of U.S., played with bat and ball upon a diamond-shaped smooth pitch, the points of the figure being named home-base, and 1st, 2nd, and 3rd bases. It is played by two sides of nine players each; if score is not equal nine innings completes a game, an innings being ended when three batsmen are out on each side. The majority of base-ball clubs are professional, amateur base-



ball being played mainly by schools and colleges.

**Basedow**, JOHANN BERNHARD (1723–90), Ger. educationist, attempted to reform Ger. educational system by expounding principles based on Rousseau combined with practical methods of Comenius; established an institute at Dessau.

**Basedow's Disease.** See under GOITRE.

**Basel.** (1) Canton in N.W. Switzerland; divided (1833) into Rural (chiefly agricultural, with 56 sq. m. forest, 1,440 ac. vineyards) and Urban Basel. Total area, 177 sq. m.; pop. 209,200. (2) Tn., cap. of above (47° 34' N., 7° 35' E.); divided by Rhine into Great (residential and professional) and Little (industrial—silk ribbons) Basel. Cathedral (14th cent.), with tomb of Erasmus; town hall and univ. (15th cent.); flourishing transit trade; important ry. st. Pop. 132,600.

*Council of Basel* (1431–43), the last of three reforming Councils held in 15th cent., was summoned by Pope Martin v., and met under his successor, Eugenius iv. The Council was bent on reconciliation with Hussites, and though the Pope at first ratified its decisions, he became in the end its bitter opponent. The Council elected an antipope, Felix v. (1439), and schism was not ended till death of Eugenius and resignation of Felix (1449). The new Pope, Nicholas v., gave a quasi-confirmation to acts of the Council; but though these carried a measure of authority in France and Germany, they were practically ignored by succeeding popes. Its decisions are not accepted by canonists.

**Base-line**, or **BASE**, in surveying, is a straight line measured on the ground, from which originates a series of triangles mapping out tract to be surveyed: on the accuracy of its measurement the result of the survey depends.

**Bashahr**, trib. hill-state, Punjab, India (31° 36' N., 78° 20' E.); under Brit. administration. Area, 3,820 sq. m.; pop. 85,000.

**Bashan**, extensive region, anc. Palestine (33° N., 36° E.), E. of Lake of Galilee; fertile tableland; famous for oak forests and cattle. Alt. 2,000 ft.

**Bashi-Bazouks**, Turk. irregular troops serving without uniform or direct pay; are much addicted to pillage, and were specially notorious in the Bulgarian atrocities of 1876.

**Bashkirtseff**, MARIE (1860–84), Russian painter and diarist of precocious talents; her *Jean et Jacques*, *The Umbrella*, and *The Meeting* now in the Luxembourg; also skilled musician and linguist, but chiefly remembered for her self-revealing *Journal*, begun at twelve, and for her *Letters*, under a feigned name, to Guy de Maupassant.

**Basidu**, British port and vil., end of Kishm I., Strait of Ormuz, Persian Gulf (26° 37' N., 55° 16' E.); coaling station.

**Basil**, name applied to several species of family Labiatae (sages, etc.); found in Europe and Northern and Central Asia; several varieties used as tonics and kitchen herbs; two (wild basil and field calamint) are natives of Great Britain.

**Basil**, name of two Byzantine emperors. (1) BASIL I. (reigned 867–86), called 'the Macedonian'

from birthplace; rule marked by territorial expansion, judicious finance, and legal reform. (2) **BASIL II.** (c. 958–1025), descendant of Basil I.; conquered Bulgarians; converted Vladimir, prince of Kiev, to Christianity (998); able but cruel ruler.

**Basil THE GREAT, ST. BASIL** (329–79), Bishop of Cæsarea in Cappadocia, one of most eminent Gr. fathers; involved in most of religious controversies of time, and resolute opponent of Arianism. Basil founded a monastic order, since known as Basilian Monks, which brought about a great change in the ideal of the religious life. He was dissatisfied with the eremitical life, and so established the cenobitical, believing that work and usefulness could be carried on in conjunction with saintliness and austerity. Consequently the Rules of St. Basil provided for common daily prayers, common meals, and hard field work, while the austerities of this life were scarcely less than those practised by the Eremites. The Rules of St. Basil have been the inspiration of monasticism in the Gr. Church, and there can be no doubt that St. Benedict's Rule owes much to them.

**Basilica.** (1) Gr. digest, in sixty books, of Justinian's laws of the Byzantine Empire, pub. in 887. (2) Roman building employed for judicial and commercial purposes. It consisted usually of an oblong nave, with side aisles, divided by colonnades, latter supporting a gallery. At one end of the building was a semicircular apse, with a dais, or raised seats, for the judges,

II.

or for other persons officiating in the business of the meeting. The first such building was the Basilica Porcia, erected at Rome, 184 B.C., by Cato 'the Censor.' Basilicas continued to be built, in Rome and other Ital. towns, down to the end of the 3rd cent. A.D. Some were converted into Christian churches, for which they became models. Such buildings were known as 'Basilican churches.' See ARCHITECTURE.

**Basilicata**, territorial div., S. Italy (40° 30' N., 16° 5' E.); fertile; malarial coast; grain, vineyards, fruit; known since 1871 as prov. of Potenza. Area, 3,845 sq. m.; pop. 473,100.

**Basilikon Doron** (Gr., 'the king's gift'), a treatise on the art of government, written by James VI. of Scotland (1598) for the instruction of his son Prince Henry in doctrine of divine right.

**Basilisk**, fabulous monster of antiquity, regarded with universal awe, and credited with many strange powers; its glance was sufficient to kill, its breath infected the air, etc. Name is now applied to harmless tree-lizard of S. and Central America, *Basiliscus mitratus*.

**Basin**, word with specialized uses in engineering, geography, and geology. In geography a depression—e.g., basin of Caspian Sea, or a river drainage area; in geology a synclinal structure affecting surface features—e.g., London Basin.

**Basingstoke**, munic. bor., par., and mrkt. tn., Hampshire, England (51° 15' N., 1° 5' W.); has ruined castle. Agricultural centre; manufactures farming implements; cloth factories, breweries;

2a

Basingstoke Canal (37 m. long) begins here. Pop. 11,500.

**Basirhat**, tn., Bengal, India (22° 40' N., 88° 51' E.), 30 m. E. by w. of Calcutta; connected by light railway with Eastern Bengal State Ry. Pop. 18,400.

**Baskerville**, JOHN (1706–75), Eng. printer; greatly developed art of typography; examples of his Bible, Prayer Book, and Latin classics much valued.

**Basket**, plaited receptacle for carrying small articles; also protection for hand when fighting or fencing. Basket work was primitive art, material—willow wands, reeds, bamboo, Span. cane, split wood. These are soaked for some time, dried out of doors, used whole or split with a special basket maker's instrument ('the splitter'). In plaiting, the bottom is first woven, and into it the sharpened ends of other pieces are plaited and turned up at the edges to form the sides; into these upright pieces are woven horizontal pieces over which they are at last turned down. Sharpened stakes, pushed down centres of the sides and fastened there, are woven together to form handle.

Plaited cane is largely used for common chairs, and was formerly much employed for sofas. Basket work is to be seen in Chippendale furniture. Bamboo furniture was introduced into West from India and Japan, where it is an important manufacture.

**Basket-ball**, an Amer. game invented by James Naismith in 1891. It is played by two sides of five players each, with an inflated leather-covered ball of about 10 in. diameter. The

object is to throw the ball into the 'basket' (a net suspended 10 ft. above the ground), which the opposing team endeavours to prevent, as in football.

**Basking Shark**, a single species; largest in N. Atlantic; liver rich in oil; habit of lying near surface.

**Basoche**, association of clerks of Paris, in existence 14th cent. till Revolution; elected a king, etc.; among privileges was that of producing morality plays, *soties*, etc.; scurrilous *soties* (satirical farces) led in the 16th cent. to loss of their theatre.

**Basque Provinces**, dist., N.E. Spain (43° N., 2° 30' W.); on Bay of Biscay; comprising three provinces, Viscaya, Guipuzcoa, and Alava; traversed by Pyrenees; fertile soil; iron mining. Area, 2,739 sq. m.; pop. 671,500.

**Basque Roads**, THE ACTION IN, an attack made by Lord Cochrane with fireships on Fr. fleet blockaded in Basque Roads (1809); successful, but unproductive of much result, as the attack was not followed up by Admiral Gambier.

**Basques**, a race of people inhabiting BASQUE PROVINCES and part of Navarre in Spain. They retained practical independence in Spain until 1876, in France until time of Revolution. They are of good height and excellent physique, fair-skinned, and dark or fair haired; are brave and intelligent, hard working, extremely religious, and characterized by great pride of birth; have long been famous as seamen and whalers. Many ethnologists hold they are descended from Iberians, the earliest known inhabitants of the peninsula; while their language, *Escuara* or

Euscara, is polysynthetic and is related to no other tongue known to philologists, whose researches have so far yielded no definite results. Grammars have been compiled by van Eys, Prince Lucien Bonaparte, and others, and the language is said to have eight dialects. The literature is modern and comparatively unimportant, consisting chiefly of historical and religious plays, proverbs, and songs.

**Basra**, BASSORA, or BUSSORAH, tn. and chief port of Mesopotamia, 70 m. up Shatt-el-Arab, at head of Persian Gulf, and on Bagdad Ry. (32° N., 47° 34' E.), has been called flatteringly the 'Venice of the East'; famous as place from which Sindbad the Sailor set sail; centre of trade in dates (annual value about £6,000,000). Pop. 60,000. Basra was occupied by the British on Nov. 17, 1914. See MESOPOTAMIA, CAMPAIGN IN.

**Bass**, in music, is the lowest and most important part of all harmony; also a male voice of lowest register.

**Bass**, a fish allied to the perch, formerly much esteemed as food; usually marine in habit, though at intervals ascending estuaries into fresh water; different varieties found in Europe, America, and Australia.

**Bass**, GEORGE (d. 1812?), Eng. explorer, spent five years exploring and mapping Australian coast; circumnavigated Tasmania along with FLINDERS.

**Bass**, MICHAEL THOMAS (1799–1884), brewer, politician, philanthropist; worked actively to abolish imprisonment for debt, and took keen interest in welfare of working-classes.

**Bass**, WILLIAM (b. 1720), Eng. brewer; founder of Messrs. Bass, Ratcliffe, and Gretton, Ltd., Burton-on-Trent, a firm of world-wide reputation.

**Bassa**, prov., N. Nigeria (7° 30' N., 7° 35' E.); forests, rubber trees; southern part unexplored; chief centre, Dekina. Area, c. 7,000 sq. m.; pop. c. 205,000.

**Bassam**, tn., Ivory Coast, Fr. W. Africa (5° 16' N., 3° 44' W.); seat of government till 1900; ivory, gold dust, palm oil. Pop. 2,500.

**Bassano**, tn., Italy (45° 46' N., 11° 43' E.); wine, olives, asparagus; straw hats, silk; birth-place of painter da Ponte, hence surnamed Bassano. Pop. 15,000.

**Bassano**, JACOPO DA PONTE (1510–92), Ital. painter; style has much in common with Rembrandt; his altar-piece, *The Nativity*, highly praised by Lanzi; the National Gallery contains two of his portraits, and three of his pictures are in Edinburgh.

**Bassaridæ**, species of carnivores whose dentition generally resembles that of the canines; raccoon-like in appearance.

**Bass Clarinet**, larger musical instrument than clarinet, and an octave lower in pitch; invented by Grenser, Dresden (1793).

**Bassein**. (1) Tn. and seapt., Bombay Presidency, India (19° 20' N., 72° 49' E.); came under Brit. control in 1818. Pop. 11,000. (2) Tn., cap. of dist. of same name, Brit. Burma (16° 46' N., 94° 46' E.); centre for rice trade; its pagoda is said to have been built in the 5th cent. B.C. Pop. 32,000.

**Basserman**, ERNST (1854– ), leader of now discredited Ger.

National Liberal Party; served as major under the notorious von Bissing during savage German coercion of Belgium.

**Basses-Alpes**, dep. S.E. France ( $43^{\circ} 10' N.$ ,  $6^{\circ} 15' E.$ ); good pastures; mountainous; climate severe; olive grows in lower valleys. Area, 2,697 sq. m.; pop. 107,200. \*

**Basses-Pyrénées**, dep., S.W. France ( $43^{\circ} 15' N.$ ,  $1^{\circ} W.$ ). Pyrenees occupy southern portion, elevation increasing w. to m.; many passes; extensive forests covering slopes furnish most valuable product; N. and E. territory consists of pastures and fertile valleys; mineral springs; sheep, cattle; Pau and Biarritz are health resorts. Area, 2,977 sq. m.; pop. 433,300.

**Basse-Terre**, seapt., French W. Indies ( $16^{\circ} N.$ ,  $61^{\circ} 42' W.$ ), cap. of Guadeloupe. Pop. 8,660.

**Basset Horn**, single-reed tenor clarinet; much favoured in compositions of Mozart, Beethoven, and Mendelssohn; invented by a maker named Horn about 1770. See HORN.

**Bassia**, tree of natural order Sapotaceæ, found in India; rich in fat, which is used for food in India and for candle and soap making in Europe; also, when purified, for making margarine.

**Bassompierre**, FRANÇOIS DE (1579–1646), Fr. diplomatist and memoir writer; a marshal of France and ambassador to various courts; took part in siege of La Rochelle (1628); suspected by Richelieu and imprisoned in the Bastille (1631–42), where he wrote *Mémoires de ma Vie*, a review of the years 1598–1631.

**Bassoon**, a large dual-tubed

wind instrument, of double-reed kind, serving as bass to oboe and clarinet; 9 ft. long, but doubled in half; played by means of a crook; tone reedy and strong in lower octave, weak and penetrating in middle, like violoncello in upper octaves.

**Bassora**. See BASRA.

**Bassot**, JEAN ANTOINE LÉON (1841–1917), Fr. soldier, astronomer, and geographer; served in Franco-Prussian War, but devoted life mainly to geodesic service of War Department; was director of Nice Observatory, and president of International Geodetic Association; pub. *Modern Geodesy in France* (1899), etc.

**Bass Rock**, THE, islet, entrance of Firth of Forth, Scotland ( $56^{\circ} 4' N.$ ,  $2^{\circ} 38' W.$ ); 350 ft. high; circumference, 1 m.; area, 7 ac.; served as prison for Covenanters; held by Jacobites against William III. (1691–4); resort of solan geese; lighthouse on S. side.

**Bass Strait** separates Tasmania from Victoria, Australia ( $40^{\circ} S.$ ,  $146^{\circ} E.$ ); breadth, 140 m.

**Bass Tuba**. See BOMBARDON; SAXHORN.

**Basswood**, the Amer. lime, *Tilia americana*; widely distributed over N. America; used for cheap furniture, paper pulp, and pianofortes.

**Bast**, Egyptian goddess. See BUBASTIS.

**Bast**, or PHLOEM, the tissue of vascular plants through which elaborated food is carried; in dicotyledons it forms a layer outside the wood and inside the cork; it is made up of sieve tubes, through which food passes, and supporting fibrous cells. Bast fibres are of great economic

value; flax, hemp, and jute are bast fibres of different plants.

**Bastar**, feudatory state, Brit. India (19° N., 81° 30' E.); high flat plateau; some mountains; dense forests; jungles inhabited by aboriginal tribe; unhealthy; timber, tanning, and dyeing barks. Chief town, Jagdalpur. Area, 13,062 sq. m.; pop. 433,300.

**Bastard** (O. Fr., meaning 'pack-saddle child'), a child born out of wedlock. Such children are not legally entitled to bear the name of either parent, they cannot inherit real property, and, as they are in nearly every legal aspect *filius nullius* ('nobody's child'), the parents can have no control over their marriage. In Eng. law an Act of Parliament is required to legitimize such a child; in Scots law the subsequent marriage of the parents confers this privilege.

**Bastard of ORLEANS**. See DUNOIS, JEAN.

**Bastard Bar**, in heraldry, an obsolete and somewhat misleading designation for symbol of illegitimacy; figure to which this term is applied is properly called the *baton*. See HERALDRY.

**Basti**, tn. and dist., United Provinces, India (26° 47' N., 82° 43' E.). Area, 2,792 sq. m.; pop. (dist.) 1,846,000, (tn.) 15,000.

**Bastia**, seapt., N.E. Corsica (42° 42' N., 9° 27' E.); former cap.; fishing; fruit; captured by British in 1745, and again in 1794, on which occasion Nelson lost an eye. Pop. 29,400.

**Bastian**, ADOLPH (1826-1905), Ger. ethnologist and traveller; wrote *Die Völker des östlichen Asien* (1866-71) and *Der Mensch in der Geschichte* (1860).

**Bastian**, HENRY CHARLTON (1837-1915), Eng. physiologist, prof. of pathological anat., Univ. Coll., London (1867-87), and later of the principles of medicine; supporter of theory of spontaneous generation; author of *The Origin of Life* (1911), etc.

**Bastiat**, FRÉDÉRIC (1801-50), Fr. economist, founder of first Fr. free-trade association (1846); wrote *Sophismes Economiques* (1847), the most brilliant of his studies of Protection.

**Bastien-Lepage**, JULES (1848-84), Fr. painter; painted portraits, landscapes, and historical pictures, including *Sarah Bernhardt*, *Joan of Arc listening to the Voices*, *Gambetta on his Deathbed*, *The Thames at London*.

**Bastille** (O. Fr. *bastir*, 'to build'), name of Fr. castle; especially given to towers guarding city gates of Paris. Now only applied to that of St. Antoine, which in 17th and 18th cents. was used to detain political prisoners. Associated with despotism, it was stormed by the populace, July 14, 1789, and destroyed with every accompaniment of violence and bloodshed; date since observed as Fête Nationale; its deep underground dungeons have given rise to many stories of wretched captivities. See FRANCE (History).

**Bastion** (Fr.), projection from fortification for permitting flanking fire along ramparts and ditches.

**Basutoland**, Brit. crown colony, S. Africa (29° S., 28° E.); bounded by Orange Free State on N. and W., Cape Prov. on S., Natal on E. and N.E.; surface is part of great plateau, c. 5,000 ft. above sea-level, and has moun-

tains crossing it, including Maluti ranges and Drakensberg; principal rivers, Orange, Caledon; healthy climate. Administration is carried out by resident commissioner, subject to authority of high commissioner for S. Africa. Brit. protectorate (1868); became part of Cape Colony (1871); war which occurred (1880-1) in consequence of attempt to disarm natives, resulted in establishment of autonomy; again taken directly under authority of imperial government (1884), since when trade and agriculture have greatly developed; loyal during Boer War (1899-1902) and the Great War. Inhabitants are of Bantu stock, majority Basutos proper, with admixture of other tribes. Basutoland is a native reserve. Cap. is Maseru. Productions include great quantities of cereals, wool, and mohair; cattle, ponies, and sheep raised for export; coal is found. Area, 11,716 sq. m.; pop. 405,900 (including 1,400 whites).

Lagden, *The Basutos* (1909).

**Bat**, flying, insectivorous animal. See CHIROPTERA.

**Bataan**, or RINCONADA, prov., Luzon, Philippines (14° 40' N., 120° 30' E.); rice, sugar, etc. Area, 436 sq. m.; pop. 46,800.

**Batac**, tn., Luzon, Philippines (18° 6' N., 120° 36' E.); rice, cotton cloth, sugar. Pop. 23,500.

**Bataille**, HENRY (1872- ), Fr. lyric poet and playwright. His main theme is the dawn and death of the passion of love. Frequently explains his views of life and art in his prefaces. His strongest work is *La Femme Nue* (1908), story of an artist's model.

**Batala**, tn., Punjab, India (31° 47' N., 75° 12' E.); cotton, silk, leather. Pop. 27,400.

**Batan**, seapt., Panay I., Philippines (11° 35' N., 122° 29' E.), 17 m. w. of Capiz. Pop. 14,300.

**Batangas**, prov. and seapt., Luzon, Philippines (13° 32' N., 121° 12' E.); coffee, cacao, and rice. Prov., area, 1,108 sq. m.; pop. 258,000; tn., 33,000.

**Batavia**. See NETHERLANDS.

**Batavia**. (1) Prov., Java, includes some adjacent islands. Area, 2,598 sq. m.; pop. 1,500,000. (2) Seapt., N. coast, Java (6° 10' S., 106° 50' E.); cap. and chief commercial city, Dutch E. Indies; the bay, shallow towards coast, served as port before Tanjong Priok harbour, 6 m. N.E., was made; mixed population; unhealthy climate; founded 1610; held by British, 1811-14; coffee, rice, sugar, and other products. Pop. c. 138,500. (3) Vil., New York, U.S. Pop. 11,600.

**Bateman**, JOHN FREDERIC LA TROBE- (1810-89), Brit. civil engineer. He devoted himself to hydraulic questions; carried through water-supply schemes in connection with various important towns, including Manchester, Belfast, Dublin, and Perth; proposed and surveyed a scheme for supplying London with water from Plinlimmon.

**Batemans**, THE, a famous theatrical family. HEZEKIAH LINTHICUM BATEMAN (1812-75) took Lyceum Theatre (1871) and introduced Henry Irving to London in *The Bells*. On his death his wife, SIDNEY FRANCES (1823-81), continued occupancy of the Lyceum till 1878, when she rebuilt and opened the Sadler's

Wells Theatre, and was the first to bring over to this country a complete Amer. company with an Amer. play, *The Danites*. Two daughters, KATE (1842-1917), and ELLEN (1845- ), achieved success on the stage. VIRGINIA (1856- ), a younger sister, married EDWARD COMPTON of the Compton Comedy Company.

**Bates, HARRY** (1850-99), Eng. sculptor; pupil of Dalou and Rodin; executed many busts and statues on class. subjects; A.R.A. (1892); some of his works, purchased by the Chertrey Trustees, are now in the Tate Gallery.

**Bates, HENRY WALTER** (1825-92), Eng. naturalist; explored Amazon with A. R. Wallace; author of *The Naturalist on the Amazons* (1863); assistant secretary of the Royal Geographical Soc., and eminent entomologist.

**Bath.** (1) Wat.-pl. and largest tn., Somerset, England (51° 23' N., 2° 22' W.), on Avon; the Roman *Aquæ Solis*; its hot saline and chalybeate springs were known to Romans from 1st cent.; contains Roman baths and other antiquities; Abbey Church, begun in Henry VII.'s reign, completed 1609; Bath and Wells have formed one bishopric since 1135: very fashionable resort in the 18th cent. Pop. 69,200. (2) City, co. seat of Sagadahoc co., Maine, U.S. (43° 55' N., 69° 52' W.); ship-building, engineering. Pop. 9,500.

**Bath, ORDER OF THE**, order of chivalry of U.K., founded 1399, refounded 1725 and 1815, and frequently extended since. Originally a purely military order, it received in 1815 a civil element; was remodelled in 1847, and since

then several times enlarged; the civil and military badges, which are slightly different, alike bear motto, *Tria juncta in uno*, about rose, shamrock, and thistle. Ceremony of installation restored by the King (1913); first held, May 1920.

**Bath, WILLIAM PULTENEY**, 1st EARL OF (1684-1764), Brit. statesman; took prominent part against Dr. Sacheverell; led opposition to Walpole, and on his fall (1741) became prime minister; lost influence on accepting peerage (1742).

**Bathgate, tn.**, Linlithgowshire, Scotland (55° 53' N., 3° 38' W.); minerals, distilling. Pop. 8,200.

**Batholite** (Gr. *bathos*, 'deep'; *lithos*, 'stone'), or BOSS, an enormous mass of igneous rock, mainly granite, forming broad dome-shaped area.

**Bathometer.** See OCEANOGRAPHY.

**Bathonian Series** (Great Oolite series), fossiliferous Jurassic limestone, first studied near Bath.

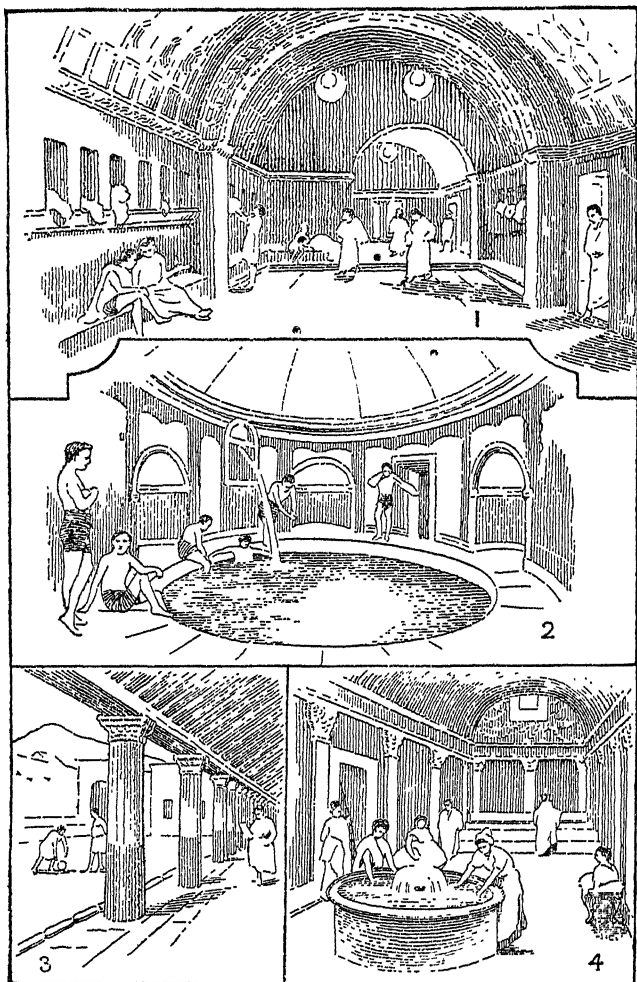
**Bathori, ELIZABETH** (d. 1614), Polish princess, said to have been a werewolf; imprisoned 1610 on charge of numberless horrible murders of young girls with the object of renewing her youth by bathing in their blood.

**Bathori, SIGISMUND** (1572-1613), prince of Transylvania; disastrous anti-Turkish policy.

**Bathos**, a descent from elevated language to commonplace or absurdity. See ANTICLIMAX.

**Baths.** The habit of bathing, both for cleanliness and for pleasure, has been practised by almost every people from the earliest times. Before the inception of public and private





*Roman Baths at Pompeii (restored).*

1. The waiting-room. 2. The cold plunge. 3. The court. 4. The hot bath.

baths it was customary to bathe in running water of rivers; but hot baths were employed by the early Egyptians, Greeks, and Persians, and are referred to in Homer as restorative after violent exertions. The buildings themselves must in primitive times have had considerable pretensions to luxury, for the bath of the Pers. king, Darius, excited wonder and admiration of Alexander the Great. It was, however, under Roman Empire that public baths reached most advanced stage of luxury. The earliest Roman baths were called *piscinæ*, and were cold swimming baths, but later developed into vast establishments called *thermæ*, which included cold swimming baths for both sexes, hot baths, vapour baths, dressing rooms, a gymnasium, and sometimes also a library and theatre. Such *thermæ* were erected by the emperors Agrippa, Nero, Titus, Domitian, and several later rulers. The baths appear to have reached their highest state of luxury under Diocletian. Marble seats were provided for thousands of bathers; water flowed from mouths of silver lions into basins of the same precious metal, and while young men played at ball in the spacious gymnasium, philosophers and elder folk discussed the news of the day in the marble galleries adorned with mosaics and enriched with sculptures. Soap being then unknown, the Romans had their bodies anointed by the bath attendants with oils and pomades, after which the skin was scraped with a curved metal instrument called the *strigillus*; usual bathing

hour was before dinner, but it was not uncommon to take several baths during course of day. In addition to hot-water and hot-air baths, sun baths were commonly indulged in by the Greeks and Romans, and the habit of burying the body in sand dates back to even earlier times. There are various modern specialized forms of taking baths, such as Turkish, Russian, electric, mineral, etc.

Cold bathing in England has been commonly practised from the beginning of the 18th cent., and the value of *sea bathing* was recognized somewhat later. Smollett, in *Humphry Clinker*, describes Scarborough bathing machines as a novelty. The excessive use of hot baths has an enervating effect; the cold bath, while undoubtedly beneficial to those of robust constitution, is often harmful to more delicate individuals.

The treatment of disease by baths is called Balneo-therapeutics, but the term is generally now regarded as including the drinking of mineral waters, mud baths, and other treatments in vogue at spas. The waters employed have usually the salts of sodium, calcium, magnesium, lithium, or iron, or sometimes other minerals dissolved in them; but the benefit is as much due to the change of air and scene, the regular bathing, dieting, and drinking of prescribed quantities of water, and the regular exercise, as to any therapeutic qualities of the waters themselves. Harrogate, Aix, Carlsbad, Marienbad, Homburg, Nauheim, Kissingen, Baden-Baden, etc., are all spas

of repute for different diseases. See HYDROPATHY.

**Baths and Washhouses Acts**, 1846 and 1878, statutes granting power to local authorities to establish public baths, wash-houses, drying grounds, etc., and levy charges for use.

**Bathsheba**, wife of Uriah the Hittite, and afterwards of David; mother of Solomon (1 Kings 1). Also Duchess of Portsmouth in Dryden's *Absalom and Achitophel*.

**Bathstone**, mixed limestone and sandstone (Lower Oolite stratum) obtained from neighbourhood of Bath; used as a building material; hardens on exposure to air, but not durable.

**Bathurst**. (1) Tn., New South Wales (33° 24' s., 149° 33' e.); gold, silver. Pop. 8,600. (2) Tn., Gambia, W. Africa (13° 28' n., 16° 36' w.); ground-nuts. Pop. 9,000. (3) Tn. and dist., Cape Colony, S. Africa (33° 30' s., 26° 45' e.); fruit. Pop. 12,000.

**Bathurst**, EARLDOM OF (1772 onwards). ALLEN BATHURST (1684-1775), 1st earl, belonged to old Sussex family and distinguished himself as Tory politician; cr. Baron Bathurst (1712), earl (1772); 2nd earl (1714-94) was lord chancellor, and was cr. Baron Apsley (1771); 3rd earl (1762-1834) became secretary for war and colonies (1812-28), and was president of the Council (1828-30).

**Bathurst**, CHARLES (1867- ), 1st LORD BLEDISLOE OF LYDNEY, Brit. politician; sugar controller (1917); raised to peerage (1918); chairman of Central Agricultural Advisory Council.

**Bathybius**, slimy precipitate of gelatinous gypsum in sea-

water; at one time supposed to be a simple organism of deep sea; name due to Huxley, who described it in 1868.

**Bathymetry**, the measurement of depths. See OCEANOGRAPHY.

**Baticaloa**, cap. of E. prov., Ceylon (7° 42' N., 81° 39' E.); rice and coco-nuts; phenomenon of 'singing fish' in its lagoon. Pop. 10,000.

**Batik**, a cotton stuff made in India and E. Indies, impressed with patterns by waxing them over and dyeing the unwaxed parts; same process applied in Holland to silk and velvet, etc.

**Batley**, tn., Yorkshire, England (53° 43' N., 1° 38' W.); heavy woollens. Pop. 36,400.

**Batman**, JOHN (1800-40), is generally regarded as founder of Victoria, Australia; in 1835 acquired from natives the site of Melbourne and district.

**Batna**, tn., Algeria (35° 34' N., 6° 15' E.); remains of Roman *Lambessa* to s.w.; walled; large barracks. Pop. 10,000.

**Batocki**, von, Ger. 'Food Controller' (1916-18); member of the agrarian group; formerly oberpräsident for the prov. of W. Prussia, and later for E. Prussia; adopted system of centralized control of all foodstuffs and raw materials of food and fodder; admitted to be less successful than Brit. method of local control.

**Batoidea**. See RAYS.

**Baton Rouge**, city, Louisiana, U.S. (30° 25' N., 91° 9' W.), on Mississippi; state cap.; univ.; cotton-seed products, lumber; captured from British by Spaniards (1779); taken by Federalists (May 1862). Pop. 17,500.

**Batrachia**, class of vertebrates

of interest as illustrating the transition from aquatic to terrestrial life; frequently considered conterminous with AMPHIBIA, or as a sub-class of the latter. Through the Dipnoi they are to a certain extent linked with fishes, and through Microsauria (Stegocephalia) with reptiles. The main anatomical differences separating batrachians from reptiles, although no satisfactory line of demarcation can be drawn, are the skull bones. Excepting a few viviparous forms, they mostly undergo a gill-breathing stage in their metamorphosis. The following classification is convenient: (1) *Stegocephalia*, extinct lizard or serpent-like batrachia: Upper Devonian to Triassic. (2) *Apoda*, limbless, worm-like, tropical batrachia belonging to 33 species; no fossil forms known. (3) *Caudata*, tailed batrachia; about 150 species; few fossil; salamanders well-known representatives. Three blind species inhabit N. Amer. and European caves. A number of skin-breathing forms, without gills or lungs, have been discovered. (4) *Ecaudata*, containing about 1,300 (including about 40 fossil) species of frogs and toads. See METAMORPHOSIS.

*Cambridge Natural History*, viii. (1901).

**Batrachomyomachia** (Greek, 'battle of the frogs and mice'), mock-heroic poem, in hexameter verse, by Pigres of Halicarnassus; long attributed to Homer.

**Battalion**, the Brit. tactical unit of infantry, organized in four companies; full war strength, 1,031, including 28 officers.

**Battam**, isl., Dutch E. Indies

(1° 6' N., 104° E.); well wooded and fertile; produces catechu. Area, 160 sq. m.

**Battambang**, tn., Cambodia, Siam (13° 6' N., 103° 6' E.); on riv. Sang Ke, discharging into Lake Tonlé Sap; ceded to France, 1907. Pop. c. 5,000.

**Battenberg**, tn., Prussia (51° 14' N., 8° 39' E.); gives title to Battenberg family. Pop. 1,000.

**Battenberg**, revived Ger. title conferred upon Countess von Hauke, morganatic wife of Prince Alexander of Hesse; made Countess of Battenberg (1851), raised to rank of princess (1858). Eldest son, LOUIS, became admiral in Brit. navy, and was first lord of the Admiralty (1912-14); cr. 1st Marquess of Milford Haven (1917); family name changed to Mount-Batten, 1917. Third son, HENRY MAURICE, married Princess Beatrice, Queen Victoria's daughter (1885), and died 1896; the daughter of the latter, VICTORIA EUGÉNIE, married (1906) Alfonso XIII. of Spain; the son, ALEXANDER ALBERT MOUNT-BATTEN (1886- ), was created Marquess of Carisbrooke (1917); served in Great War (1914-18); married Lady Irene Frances Ada Denison, only daughter of the 2nd Earl of Londesborough (1917).

**Battering-ram**, primitive military weapon, dating back to times of Josephus, or earlier, used for beating down the walls of a fortress; it was a heavy beam, about 120 ft. long, shod at the fore end with a piece of metal, shaped like a ram's head, and generally slung in a wooden protected framework.

**Battersea**, metropolitan bor., S.W. London (51° 28' N., 0° 11'

w.); fine park; factories and foundries. Pop. 149,200.

**Battersea**, CYRIL FLOWER, 1st BARON (1843–1907), Eng. politician (Liberal); made a peer (1892); interested in art.

**Battery**, a number of ordnance with their equipment; the men and horses attending a battery; a group of guns and their protecting work. The number of men and guns varies according as the battery is Royal Field Artillery, Royal Horse Artillery, or Royal Garrison Artillery.

**Battery**, ELECTRIC PRIMARY, an arrangement of cells, elements, or couples which produces a current of electricity by chemical action. The original voltaic cell consisted of a zinc and a copper plate joined by a wire and immersed in a weak acid solution. The hydrogen liberated made a coating on the copper (negative) plate, stimulated reverse action and thus weakened the current (*polarization*). This was obviated in the Daniell's cell by placing the copper in a solution of copper sulphate in a porous pot, the hydrogen then replacing the copper which was deposited on the copper plate. In the Grove cell platinum foil is immersed in concentrated nitric acid, instead of copper in copper sulphate. The Bunsen cell is a modification of the Grove cell, the expensive platinum plate being replaced by a rod of carbon. In the Leclanché cell zinc rests in sal-ammoniac solution, and a plate of carbon (replacing copper) is placed in a porous pot packed with manganese dioxide and bits of carbon. This is the cell generally used for electric bells, etc.

**Bathhyani**, family of Hungarian nobles who claim descent from Ors, companion of Arpad; chief members, PRINCE KARL JOSEPH (1697–1772), Austrian field-marshal, distinguished in the War of Austrian Succession; COUNT CASTMIR (1807–54), follower of Kossuth, and Hungarian foreign minister; COUNT LOUIS (1809–49), premier of first responsible ministry (1848), but resigned; executed by order of court-martial; COUNT LUDWIG (1860– ), led the opposition to Count Tisza.

**Battle**, a hostile encounter between two or more armies on land or navies at sea. The real import of a battle depends not on the numbers engaged or the casualties, but on the degree in which it realizes the general objective of one side or the other. The chief distinction in modern war is between battles in the open and battles on elaborately entrenched fronts. Among the greatest land battles in history are the following: Marathon (490 B.C.), Syracuse (413), Arbela (331), Metaurus (207), Philippi (42), victory of Arminius over Varus (A.D. 9), Chalons (451), Tours (732), Hastings (1066), Orleans (1429), Lützen (1632), Blenheim (1704), Pultowa (1709), Saratoga (1777), Valmy (1792), Waterloo (1815), Königgrätz or Sadowa (1866), Sedan (1870), Mukden (1904). These include the battles which, according to Sir Edward Creasy (*The Fifteen Decisive Battles of the World*), 'claim our attention, independently of the moral worth of the combatants, on account of their enduring importance' To the number may now be added Marne (Sept.

1914 and July 1918), Ypres (Oct.—Nov. 1914 and April–May 1915), Verdun (Feb.–July 1916), Amiens (Aug. 8, 1918), Cambrai–St. Quentin (Sept.–Oct. 1918), Armageddon (Sept.–Oct. 1918). Of naval engagements the following are among the most important: Salamis (480 B.C.), Actium (31 B.C.), Lepanto (1571), Spanish Armada (1588), Gibraltar (1607), Eng. victory over the Dutch (1666), St. Vincent (1693), Carthage (1702), Finisterre (1747), Gibraltar (1782), Ushant (1794), St. Vincent (1797), Camperdown (1797), Trafalgar (1805), Navarino (1827), Acre (1840), Alexandria (1882), Wei-hai-wei (1895), Santiago (Cuba, 1898), Tsushima (1905), Falkland Islands (1914), and Jutland (1916).

**Battle**, par. and tn., Sussex, England (50° 55' N., 0° 30' E.), formerly Senlac; received name from battle of Hastings (1066), fought on ground on which town and abbey, founded by William the Conqueror, now stand. Battle Abbey Roll is supposed to contain names of nobles who fought under William at Hastings, but its authenticity is doubtful. Original ms. destroyed by fire (1793). Pop. of par. 3,000.

**Battle**, TRIAL BY, a form of judicial procedure, introduced into England by Normans, in which the issue was decided by result of personal encounter between the parties; was for long the regular mode of trying accusations of treason, etc., brought by private individuals.

**Battle Creek**, city, Michigan, U.S. (42° 22' N., 85° 10' W.); manufactures health foods and fruit; machinery. Pop. 25,300.

**Battledore**. (1) Plaything like small tennis-racquet used in game of battledore and shuttlecock; (2) (obsolete) hornbook; (3) implement used for beating clothes in washing; (4) applied to certain tools, etc.

**Battleford**, tn., Saskatchewan, Canada (52° 40' N., 108° 19' W.); agricultural centre; invested by Louis Riel (1885). Pop. 1,300.

**Battlement**, wall or rampart built in olden times round top of fortified building, with embrasures for discharge of arrows or guns; rising parts of wall termed *cops* or *merlons*, and embrasures styled *crenelles*; now merely used for decorative effect.

**Battleship**. See NAVIES.

**Battonya**, tn., Csanad co., Hungary (46° 18' N., 21° 1' E.); tobacco. Pop. 13,000.

**Batu Khan** (d. 1256), Mongol chief, grandson of Jenghiz Khan; burnt Moscow and overran Russia, Poland, Hungary, and Silesia (1237–42); returned to East on death of his father.

**Batum**. (1) Prov., Transcaucasia, Russia, on E. coast of Black Sea; mainly agricultural; chief exports, silk, petroleum, grain, and flour. Pop. 164,300. (2) Fort. tn. and port in above prov. (41° 38' N., 41° 40' E.); exports oil. Pop. 46,000.

**Batwa**, nomad tribe of African pygmies, discovered in 1880 by Pogge and Wissmann near Wissmann Falls (Belgian Congo); 4 ft. high; lightish skins; hunt game with bows and poisoned arrows.

**Bauang**, tn., Luzon, Philippines (13° 50' N., 121° E.); hats and mats of palm fibre; railway to Manila. Pop. 40,000.

**Bauchi**, prov., N. Nigeria, Brit. W. Africa (c.  $9^{\circ} 12' - 11^{\circ} 24' \text{ N.}$ ,  $8^{\circ} 24' - 11^{\circ} 20' \text{ E.}$ ); the larger portion N.W. to S.E. occupied by belt of highlands; plateaus forming S.W. of prov. fertile and grow grain, cotton, indigo; inhabitants mainly pagan tribes; in consequence of persistent raiding by Fula, a Brit. expedition was sent out (1902); amir overthrown and country brought under Brit. rule. Pop. c. 1,000,000.

**Bauchop's Hill**, Gallipoli, European Turkey ( $40^{\circ} 15' \text{ N.}$ ,  $26^{\circ} 16' \text{ E.}$ ); a ridge partly captured by New Zealanders (Aug. 1915); named after colonel of Otago regiment who fell there.

**Baucis**, wife, according to Ovid (*Metamorphoses*), of Philemon; the couple extended hospitality to Zeus in Phrygia, and in reward their house was changed into a temple while others were destroyed by floods; transformed into trees in answer to their request that they might not be separated; symbolize types of conjugal constancy.

**Baudelaire**, CHARLES PIERRE (1821-67), Fr. poet; an admirer of Poe, many of whose works he translated; resembles that author in morbidity, but his poems surpass those of Poe in depth and technique; had a profound influence on later Fr. poetry; pub. *Les Fleurs du Mal*, *Les Paradis Artificiels* (inspired by De Quincey), *L'Art Romanique*, etc.

**Baudrillart**. (1) ALFRED (1859- ), member Fr. Academy, Fr. historian and churchman; an ardent propagandist of Allied cause during Great War; writings have done much to recon-

cile science and religion; pub. *Philippe V. et la Cour de France*, etc. (2) JACQUES JOSEPH (1774-1832), Fr. writer on forestry; minister of woods and forests (1819). (3) HENRI JOSEPH LÉON (1821-92), son of above; political economist; author of *Manuel d'Economie Politique*, etc.

**Bauer**, CAROLINE (1807-78), Ger. actress of much celebrity; contracted morganatic marriage with Prince Leopold, afterwards King of the Belgians (dissolved 1830); left memoirs of theatrical life, *Aus meinem Bühnenleben*, etc.

**Bauernfeld**, EDUARD VON (1802-90), Austrian dramatist; author of light comedies, farces, etc.; also wrote lyrical poems and several novels.

**Bauhin**, KASPAR (1560-1624), botanist; b. Switzerland, of Fr. descent; called 'the Linnæus of the 16th cent.'; his lifework was the *Pinax* (1623).

**Bauhinia**, a genus of Leguminosæ; native of tropics, especially Brazil and India; climbing habit general; so named in honour of Kaspar Bauhin and his brother John.

**Baumé**, ANTOINE (1728-1804), Fr. chemist; devised the Baumé system of graduating hydrometers, now widely used.

**Baumgarten**, ALEXANDER GOTTLIEB (1714-62), Ger. philosopher; first used the term 'æsthetics' for the theory of the beautiful; pub. *Disputationes de nonnullis ad poema pertinentibus* (1735), *Ethica Philosophica* (1740), *Æsthetica* (1750-8).

**Baumgarten**, PAUL VON (1848- ), Ger. pathologist; discovered simultaneously with, though independently of Koch,

the bacillus of tuberculosis; pub. *Tubercle and Tuberculosis* (1885), and *Handbook of Pathological Mycology* (1890).

**Baumgarten=Crusius**, LUDWIG FRIEDRICH OTTO (1788–1842), German theologian and author; from 1812 prof. of theol. at Jena; pub. *Textbook of Church Morals* (1826), *Sources of Bible Theology* (1828), and *Compendium of Dogma* (1840), the latter completed by Karl Hase (1846).

**Baumgärtner**, ANDREAS, BARON VON (1793–1865), Austrian scientist and statesman; prof. of physics at Vienna (1817–33); delivered popular scientific lectures to artisans, which had great influence; resigned professorship and became director of imperial porcelain factories; afterwards held various state appointments; devoted his later years to study of meteorology.

**Baumgärtner**, GALLUS JAKOB (1797–1869), Swiss politician and historian; founded the *Neue Schweizer Zeitung* (1842); historical works include *Die Schweiz in ihren Kämpfen und Umgestaltungen von 1830–50* (1853–66).

**Baumgärtner**, KARL HEINRICH (1798–1886), German physician; prof. of medical clinics at Freiburg (1824–62); made important discoveries in embryology and the circulation of the blood; preceded Schwann in formulating the modern cell theory.

**Baur**, FERDINAND CHRISTIAN (1792–1860), Ger. theologian; prof. of theology at Tübingen; wrote numerous works on Church history, Biblical criticism, and the philosophy of religion.

**Bautain**, LOUIS EUGÈNE MARIE (1796–1867), Fr. philosopher;

opposed atheistic tendency of the philosophy of his day; pub. *Philosophie du Christianisme* (1835), *Psychologie Expérimentale* (1839), *Philosophie Morale* (1840), and similar works.

**Bautzen**, cap. of Upper Lusatia, Saxony (51° 11' N., 14° 27' E.); many industries: hosiery, gloves, and machinery; notable architectural features are the Rathaus, and the church of St. Peter (1441–64); besieged by the Hussites (1431); captured by Saxons (1620), Wallenstein (1633), Saxons again (1634). Napoleon defeated the allied Prussians and Russians here in 1813. Pop. 32,800.

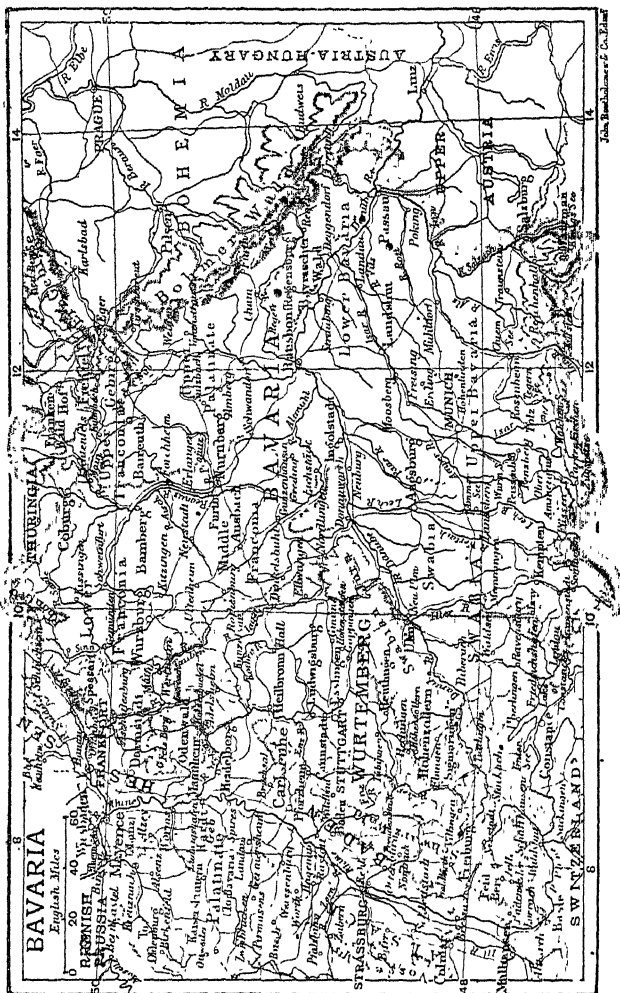
**Bautzen Powder**, an explosive made of nitrated wood and potassium nitrate; may be compressed into cartridges; made at Bautzen (Saxony).

**Bauxite** ( $Al_2O_3 \cdot 2H_2O$ ), clay-like aluminium ore, found in S. France, co. Antrim, Ireland, and U.S.; used for manufacture of aluminium. See ALUMINIUM.

**Bavai**, tn., Nord, France (50° 14' N., 3° 55' E.); Brit. 1st Corps under Haig held ground between the place and Maubeuge (Aug. 25, 1914); in Ger. hands from Aug. 25, 1914, till Nov. 7, 1918. See MONS, RETREAT FROM.

**Bavaria**, or BAYERN (49° N., 12° E.), Socialist republic and member of Republic of German Empire, E. side of S. Germany. Bavaria has detached portion called Palatinate or Rhenish Bavaria, W. of Rhine, N. of Alsace. Surface along boundaries is generally hilly; chief ranges, those of Alps in S. (highest peak, Zugspitze, 9,700 ft.); Frankenstein, Fichtelgebirge, and Rhon-





gebirge in N.; Böhmerwald in N.E.; Haardt mts. in Palatinate. Palatinate is drained by Rhine and tributaries, s. of Bavaria proper by Danube with tributaries Isar and Inn, N. by Main; Danube and Main connected by Ludwig's Canal; principal lakes, Ammer See, Starnberger See, Walchen See. Climate varies; lower parts have mean temp. of 50° F., higher, 39°; rainfall is from 25 to over 75 in.

Over half area is cultivated; chief wealth, produce of fertile soil; plains N. of Munich called 'granary of Germany'; chief crops are rye, oats, barley, wheat; hops, sugar-beet, tobacco, vines grown in Franconia, flax in Upper Bavaria and Swabia, vines in Palatinate; one-sixth of surface under grass, cattle and sheep largely raised, dairy farming carried on; one-third of area under timber—oak, beech, pine; chief forest districts are along Alps, in s., in Franconia and Palatinate. Chief minerals are salt, coal, lignite, iron, graphite, lithographic stone; mineral springs abound. Most important manufacture is beer; other industries are pencil making, Christmas card producing, distilling, manufacture of linens, woollens, glass, porcelain, sugar, toys, chemicals, jewellery, mathematical instruments. Cap. Munich. Area, 30,346 sq. m.; pop. 6,887,300.

*History.*—Bavaria was apparently inhabited from about 600 B.C. by Celtic people, who were conquered by Rome late in 1st cent. B.C. After fall of Western Empire country was occupied by tribes called Boiarii, who ulti-

mately became tributary to Franks; ruled for over two centuries by dukes; formed part of Charlemagne's dominions, and after his death was governed first by margraves, and after 920 by dukes; duchy held by Guelph family (1070–1137); granted by emperor to Otto, Count of Wittelsbach (1180), ancestor of recent dynasty. During several centuries various partitions of duchy occurred, but in 1506 country was united under Albert the Wise, who established system of primogeniture; on extinction of younger or Bavarian line of Wittelsbach family with death of Maximilian Joseph in 1777, succession passed to representative of older branch, Charles Theodore, Elector Palatine, whose family had held Palatinate since 1329, when it was separated from Bavaria proper. Bavaria was after this involved in wars, first against Austria and afterwards against France, to whom she lost Palatinate in 1801. She then formed alliance with France, by whose aid she became a kingdom in 1805; subsequently joined alliance against Napoleon (1813); regained Palatinate w. of Rhine (1814–15); new constitution granted by Maximilian (1818); became integral part of Ger. Empire (1871). Ludwig II. committed suicide in 1886; succeeded by brother, Otto I., on account of whose insanity country was governed by regent. Ludwig III. became king (1913); in Nov. 1918, dynasty was deposed and independent Socialist republic founded; provisional constitution made public (Jan. 1919), chief items being: supreme

power lies with people; unicameral Diet; suffrage is universal, equal, direct, secret, proportional; no privileges for birth and caste; all religious associations have equal rights and freedom in their activities.

Buchner, *Geschichte von Baiern* (1853); Reizler, *Geschichte Bayerns* (1898); Baedeker, *Southern Germany* (1904).

**Baveno**, tn., Lake Maggiore, N. Italy (45° 55' N., 8° 30' E.); health resort; granite quarries, porcelain. Pop. 2,500.

**Bawbee**, Scots word for a half-penny (rarely used now).

**Bawian**, isl., Dutch E. Indies (5° 48' S., 112° 40' E.); rice. Cap. Sengka Pura. Pop. 33,000.

**Bax**, ERNEST BELFORT (1854–), Eng. Socialist and author; assisted Morris in founding Socialist League (1885); active member of Social Democratic Federation; writings chiefly on historical aspects of Socialism.

**Baxar**, tn., Bengal, India (25° 34' N., 83° 58' E.); on r. bk. of Ganges; holy place. Pop. 14,000.

**Baxter**, SIR DAVID (1793–1872), Scot. philanthropist; linen manufacturer, Dundee; introduced power-loom (1836); cr. baronet (1863); presented Baxter Park to Dundee; left £600,000 for charitable purposes.

**Baxter**, RICHARD (1615–91), Eng. Puritan preacher; born at Rowton, Salop. During the Civil War he acted as chaplain in the Parliamentary army; strongly opposed to execution of Charles I., and was influential in bringing about the Restoration; became Charles II.'s chaplain. Baxter subsequently underwent much perse-

cution at the hands of Judge Jeffreys, being imprisoned for eighteen months. He was noted for the saintliness of his private life, and though he suffered continually from ill-health, his industry was remarkable. He is credited with the authorship of nearly 170 works, of which the best known is his *Saints' Everlasting Rest* (1650), others being *Call to the Unconverted* (1657), *The Life of Faith* (1670), and *Christian Directory* (1675).

*Life*, by Davies (1887).

**Bay**, indentation in a coastline; chestnut colour (see BAYARD); peculiar bark of a dog (hence Scott's 'deep-mouthed bloodhound's heavy bay'); the laurel tree (hence to be 'crowned with bays' is to be crowned with laurel leaves); bay window, division of room architecturally severed from rest, and so forming a bay or recess in a room.

**Bayaderes**, or DEVA-DASIS, Ind. dancing girls attached to service of the temples of southern India; distinct from nautch girls of northern provinces.

**Bayard** (O. Fr. *bay*), originally bay horse; especially applied to celebrated bay steed of RINALDO.

**Bayard**, PIERRE DU TERRAIL, CHEVALIER DE (1473–1524), Fr. military commander; born in Dauphiné; perfect example of chivalrous knight of mediæval type; was renowned for looks, bravery, kindness, piety, and military genius—the *Chevalier sans peur et sans reproche*. After serving as page to the Duke of Saxony, he entered the service of Charles VIII. of France, whom he accompanied into Italy; distinguished himself at battle of

Fornovo (1495), when he was knighted; held the bridge of the Garigliano single-handed against 200 Spaniards; took part in the sieges of Genoa, Padua, and Brescia; displayed remarkable bravery at the battle of Ravenna (1512); fell a prisoner to Henry VIII. at the Battle of Spurs (1513), but was immediately set at liberty; conferred knighthood on Francis I., at latter's request, after the victory of Marignano; mortally wounded in defending passage of the Sesia against the Milanese.

**Bayard**, THOMAS FRANCIS (1828–98), Amer. democratic statesman and diplomatist; ambassador to Great Britain (1893–97); dealt tactfully with the Bering Sea controversy.

**Bayazid**, fort. tn., Asiatic Turkey (39° 42' N., 44° 7' E.), 150 m. E.S.E. of Erzerum; occupied by Russians (Nov. 1914); carpets. Pop. 4,000.

**Baybay**, tn., Leyte I., Philippines (10° 42' N., 124° 55' E.); hemp, rice. Pop. 23,200.

**Bayberry** (*Pimenta acris*), tropical Amer. plant of myrtle order; leaves used for bay rum. Common bay rum consists of Jamaica rum, alcohol and water, and a small quantity of the essential oil distilled from bayberry leaves.

**Bay City**, tn., Michigan, U.S. (43° 38' N., 83° 14' W.); fish, lumber. Pop. 45,200.

**Bayet**, JEAN FERDINAND (1882–1915), Fr. author and art critic; chief works, *Les Richesses d'Art de la Ville de Paris—Les Edifices religieux; Egypt*; fell in the Great War.

**Bayeux**, tn., Calvados, France (49° 17' N., 0° 41' W.); early

Gothic cathedral; lace, linen, pottery. Pop. 7,600. *Bayeux Tapestry* (231 ft. long, 20 in. wide), preserved in Bayeux Museum, represents seventy-two scenes in conquest of England (1066), with Latin descriptions; agreed to be contemporary work.

**Bay Islands**, group in Caribbean Sea. N. of Honduras (16° 30' N., 86° 30' W.); bananas and coco-nuts; ceded by Britain to Honduras (1059). Pop. 6,000.

**Bayliss**, SIR WYKE (1835–1906), Eng. painter and author; president of Royal Soc. of Brit. Artists (1888–1906); knighted in 1897; confined himself to architectural painting; notable works, *Trèves Cathedral; St. Mark's, Venice; The Cathedral, Amiens*.

**Bayly**, ADA ELLEN. See LYALL, EDNA.

**Bayly**, THOMAS HAYNES (1797–1839), Eng. song-writer—e.g., 'She wore a Wreath of Roses'; novels and dramatic work long since forgotten.

**Baynes**, THOMAS SPENCER (1823–87), Eng. philosopher and man of letters; educated Edinburgh and London Univs.; ed. *Edinburgh Guardian* (1850–52); assistant-ed. of *Daily News* (1858); prof. of logic at St. Andrews (1864); ed. *Encyclopædia Britannica*, 9th edition (1873).

**Bay of Islands**. (1) Inlet, North Island, New Zealand (35° 14' S., 174° 8' E.); safe harbour. (2) Bay, W. coast, Newfoundland (49° 12' N., 58° 7' W.).

**Bayonet**, short sword fixed to muzzle of rifle; introduced into French army by Louvois, under Louis XIV.; takes name from BAYONNE. Brit. bayonet (1908 pattern) short, straight sword,

17 in. long, fixed to extension of the rifle stock. Changes in the service bayonet have recently been made.

**Bayonne.** (1) Fortified tn., Basses-Pyrénées, France (43° 29' N., 1° 28' W.); Eng. possession (1152-1451); 13th cent. cathedral; leather, chocolate, hams. Pop. 28,000. (2) City, New Jersey, U.S. (40° 40' N., 74° 6' W.); chemicals and petroleum refining. Pop. 55,500.

**Bayreuth**, or **BAIREUTH**, tn., Upper Franconia, Bavaria (49° 55' N., 11° 34' E.), former residence of margraves; noted musical festivals; national theatre erected by Ludwig II. for performance of Wagner's operas; houses of Wagner and Richter; Liszt's burial-place; woollen, linen, and cotton goods; marble works. Pop. 34,500.

**Bay Rum.** See **BAYBERRY**.

**Bayswater**, residential dist., London (51° 31' N., 0° 12' W.); was source of many springs.

**Bayuda Steppe**, vast desert of stony hills and thickets, Egyptian Sudan (15°-19° 30' N., 31°-34° E.); crossed by Gordon Relief Expedition (1884).

**Bay Window.** See **BAY**.

**Baza**, tn., Granada, Spain (37° 31' N., 2° 43' W.); remains of Moorish castle; agricultural centre; linen, hempen goods, pottery; mineral springs; agricultural centre. Pop. 13,000.

**Bazaine**, **FRANÇOIS ACHILLE** (1811-88), Fr. marshal; rose from ranks; made general in Crimean War; distinguished himself at Solferino; chief commander in Franco-German War; his lethargic and indecisive action contributed to Fr. defeat; was sentenced to 20 years' detention

for capitulating at Metz before necessity demanded, but escaped (1874), and died in Spain.

**Bazalgette**, **SIR JOSEPH WILLIAM** (1819-91), Eng. civil engineer of Fr. extraction; chief engineer to Metropolitan Board of Works; carried out London sewage scheme, and was responsible for work on sections of the Thames Embankment and on various London bridges.

**Bazancourt**, vil., dep. Marne, France (49° 23' N., 4° 11' E.); occupied by Germans, but restored to France Oct. 1918.

**Bazard**, **AMAND** (1791-1832), Fr. Socialist, a leading exponent of Saint-Simonism; founded a society of Amis de la Vérité, modelled on Ital. Carbonari.

**Bazeilles**, vil., dep. Ardennes, France (49° 41' N., 4° 57' E.); all destroyed (1870) except the *House of the Last Cartridge* (picture by de Neuville). Pop. 2,000.

**Bazentin**. (1) **LE GRAND**, vil., Somme, France (50° 3' N., 2° 50' E.); captured by British, July 14, 1916. (2) **LE PETIT**, neighbouring vil. to above. See **SOMME**, **BATTLES OF THE**.

**Bazin**, **RENÉ FRANÇOIS NICOLAS MARIE** (1853- ), French novelist, an upholder of the old ways, the Church, the aristocracy, and peasant proprietorship, also stands resolutely for patriotism; pub. *L'Ame Alsacienne*, *Le Blé qui lève*, *Récits du Temps de la Guerre*, and numerous others; many of his works have been trans. into English.

**B.C.**, before Christ; British Columbia.

**B.Ch.**, Bachelor of Surgery.

**B.Ch.D.**, Bachelor of Dental Surgery.

**B.C.L.**, Bachelor of Civil Law.

**B.D.**, Bachelor of Divinity.

**Bdellium**, name applied to resins of several species of *Balsamodendron*, resembling myrrh, and known, according to origin, as Indian, African, or Persian Gulf bdellium; formerly used in pharmacy. The bdellium of Scripture was a gem.

**B.D.S.**, Bachelor of Dental Surgery.

**Beach**, SIR M. E. H. See ST. ALDWYN, VISCOUNT.

**Beach**, THOMAS MILLER. See LE CARON.

**Beaches**, RAISED, anc. sea margins presenting horizontal terraces at varying heights above present sea-level, caused by gradual elevation of land.

**Beachley**, vil., Gloucestershire, England (51° 37' N., 2° 39' W.); southern extremity of Offa's Dyke; salmon fishing; site of large dock and shipbuilding yard built by government (1917).

**Beachy Head**, headland, s. coast of Sussex, England (50° 44' N., 0° 15' E.); perpendicular chalk cliff, projecting into Eng. Channel, 570 ft. high; French gained naval victory over combined Eng. and Dutch fleets (1690); Belle Tout lighthouse erected (1831); new lighthouse, begun 1899, completed in 1902.

**Beaconsfield**. (1) Tn. and par., Bucks, England (51° 35' N., 0° 38' W.); the burial-place of Edmund Burke; residential suburb of London. Pop. (est.) 5,000. (2) Suburb, Kimberley, Cape Prov., S. Africa (28° 42' S., 24° 45' E.); diamond mines. Pop. c. 20,000. (3) Tn., Tasmania (41° 13' S., 146° 48' E.); centre of richest goldfield in island.

**Beaconsfield**, BENJAMIN DISRAELI, EARL OF (1804–81), Eng. statesman and novelist; born in London; son of Isaac Disraeli (author of *Curiosities of Literature*, etc.). The father with all his family abandoned Judaism, and Benjamin was baptized in the Church of England (1817). He received little schooling, but had the run of his father's extensive library; in solicitor's office, Old Jewry (1821–3); entered at Lincoln's Inn (1824), but, having made acquaintance of John Murray, turned attention to literature; achieved considerable success with his novel *Vivian Grey* (1826); became society dandy; health breaking down, he travelled abroad for some years, reappearing as Radical candidate for High Wycombe (1832); attacked Liberals in *Letters of Runnymede* (1836); returned as Conservative member for Maidstone (1837); delivered maiden speech in House—a disastrous failure, but memorable for his prediction, 'The time will come when you will hear me.' In 1839 married Mrs. Wyndham Lewis whose fortune relieved his pecuniary embarrassments, and whose devotion to her 'Dizzy' almost amounted to idolatry. At first a follower of Peel, but went over to the Protectionists; became chancellor of the exchequer under Lord Derby (1852), again (1858–9 and 1866); prime minister for a short time (1868), and again took office (1874–80). During this period were passed a Factory Act, Artisans' Dwellings Act, and the Agricultural Holdings Act; cr. Earl of Beaconsfield in 1876.

Disraeli was undoubtedly one of the greatest statesmen of modern times; a master of epigram and a brilliant debater; his many novels remain as valuable pictures of the times in which he lived. The best of these are: *Lothair*, *Sybil*, *Coningsby*, *Tancred*, and *Henrietta Temple*.

*Authoritative Life*, by Mowpenny (2 vols. 1910, 1912); 3rd and 4th vols. by George Earle Buckle (1914, 1916); completed by issue of 5th and 6th vols. in June 1920. In the last two volumes of this work, Beaconsfield's curious correspondence with Lady Bradford and Lady Chesterfield was, for the first time, made public. After the death of his wife (1872), he wrote Lady Bradford over 1,100 letters of impassioned love and political gossip, and proposed to her widowed sister, then over seventy. Much of his correspondence with Queen Victoria, whom he treated with almost Oriental adulation, was also printed for the first time.

**Beadle**, or **BEDELLUS**. (1) A functionary bearing a mace or wand of office, who precedes civic, univ., or eccles. dignitaries; still survives at many univs. (2) Parish officer, practically a constable, appointed by vestry—until 1834 an official of some importance. (3) In Scotland, a church officer who attends on the clergyman at divine worship.

**Beads**. Glass beads are made from rough glass tubing, which is cut into small sections and heated in moving drums with charcoal, etc. They have been used as ornaments from earliest times, specimens being found in Assyrian temples, on Egyptian

mummies, and in the graves of Romans, Greeks, and Britons.

Beads have also been used from very early times to count any given number of prayers, and they are so used by Buddhists and Mohammedans to-day. Sometimes the beads are berries, and a definite number is marked by metal disks or threads of silk. Their use has its origin in the systematization of the instinct to repeat given petitions or praises, and this has been found in Christianity as in paganism. The early hermits used to count their petitions by numbers of stones, but the string of beads has resulted in the ROSARY, an obviously more convenient form.

**Beagling**, old Eng. sport. The beagle resembles a foxhound, but is much smaller (smallness being one of its points), with very short legs and not anything like the speed of the foxhound; the pack is therefore followed on foot, often with the addition of hunting poles for clearing obstacles, and used only for chasing hares and rabbits. Beagles have deep bell-like bay to which they probably owe their name, and are extremely intelligent and faithful; now to great extent superseded by harriers.

**Beale**, DOROTHEA (1831–1906), Eng. educationist; tutor at Queen's Coll., London (1849–54); became principal of Ladies' Coll., Cheltenham (1858); she exercised a remarkable influence over her pupils, and made the college the best secondary girls' school in England; founded St. Hilda's Hall, Oxford, for women students.

**Beale**, LIONEL SMITH (1828–1906), Eng. physiologist; was

prof. of anat. and physiology, and subsequently of pathology and med. at King's Coll., London; pub. books of great value on microscopy, etc.

**Beam**, WHITE (*Pyrus aria*), a tree of apple group of Rosaceæ; grows on chalk soil; scarlet fruits like small apples.

**Bean**, seeds of certain leguminous plants, as *Vicia*, *Dolichos*, *Phaseolus*, *Glycine*, highly nitrogenous; universally cultivated for food. See LEGUMINOSÆ.

**Bean Feast**, colloquial term for any kind of jovial feast; probably derived from the old custom of cutting the Twelfth-Night cake, in which was hidden a bean, the receiver of which was declared the king of the feast.

**Bean Tree**, a term loosely applied to various trees owing to similarity of fruit to a bean pod, especially to bean tree of Australia, the Moreton Bay chestnut (*Castanospermum australe*), the locust tree (*Ceratonia siligua*), and four or five species in U.S.

**Bear**, term applied on Stock Exchange to (1) person who, having sold stock not yet in his possession, with idea of buying and delivering it when prices have gone down, seeks to lower prices; (2) stock so sold. See BULL.

**Bear** (*Ursidæ*), a family of Arctoid carnivora; widely distributed except in Australia, and Africa s. of Atlas Mts. Arrangement of teeth (molars) facilitates feeding on vegetable diet; plantigrade, entire sole of feet used for walking. Soles of polar bear are covered with hair to prevent slipping on ice. Chief varieties are: common brown bear (*Ursus arctos*), of Europe and Asia;

polar bear (*U. maritimus*); grizzly bear (*U. horribilis*) and black bear (*U. americanus*) of N. America; spectacled bear (*U. ornatus*), of the slopes of the Andes; sloth bear (*U. labiatus*), of S. Asia and Ceylon.

**Bear** (CONSTELLATION). See under URSA.

**Bear-baiting and Bull-baiting**, brutal form of Eng. sport in vogue from the times of Henry II. until its prohibition in 1835; was conducted in amphitheatres called 'bear-gardens,' in which the bear was chained to a stake and worried by bull-dogs. The bull was also frequently tethered, and his nose well peppered to render him still more ferocious. Queen Elizabeth used to witness these exhibitions, and the 'Paris Garden,' Bankside, Southwark, was a noted resort at that period. The sport dates back to the Romans, and was very popular throughout Europe.

**Beardmore**, WILLIAM, FIRST BARON INVERNAIRN (1921); (1856- ), Brit. engineer, whose firm built, among other airships, R 34.

**Beardsley**, AUBREY VINCENT (1872-98), black-and-white decorative artist, whose work, superb in technique, sometimes degenerated into the decadent and erotic; influenced the æsthetic movement of late 19th cent.

**Bearer Company**, formerly a separate unit in Army Medical Service; replaced by bearer division; three sections in each field ambulance; render first aid and transport to dressing and collecting stations.

**Bearing**, direction of ship with respect to points of compass, or bearing of any mark relative



to fore-and-aft line of ship (nautical); part of building resting on support, as beam upon wall, or span between supports (arch.); support which permits moving part of machine to revolve or slide (mechanics). The simplest bearing consists of block and cap containing two semi-cylindrical 'brasses' between which the shaft journal rests, and lubrication contrivance to interpose film of oil between journal and brasses. In *thrust block* bearing, the journal is provided with collars fitting into grooves in the brasses, to prevent longitudinal shifting of shaft—e.g., of propeller shaft. *Footstep* or *pivot* bearing supports the entire weight of vertical shaft, and must, therefore, be provided with special lubricating apparatus. Friction is reduced by fitting roller or BALL BEARINGS to vehicles.

**Bearing Metals**, alloys used for the production of bearings for the moving parts of machines; one class contains chiefly copper and tin, the second class consisting of tin, antimony, and lead.

**Bear Lake**. (1) Lake, New Brunswick, Canada (45° 37' N., 67° 5' W.). (2) GREAT, lake N.W. Canada (66° N., 120° W.); discharges through Bear R. into Mackenzie R. Area, 14,000 sq. m.

**Béarn**, anc. prov., S. France (42° 30' N., 0° 10' W.), united with France by Henry of Navarre; now forms part of dep. Basses-Pyrénées; cap. Pau.

**Beas**. (1) One of five rivers of Punjab, India (*Hyphasis* of Greeks); joins Sutlej (32° 5' N., 75° 50' E.); length, 295 m. (2) Riv., India; joins Ken (24° N., 79° 22' E.), a trib. of Sutlej.

**Beath**, par., Fifeshire, Scotland (56° 7' N., 3° 20' W.). Cowdenbeath (in the par.) is the centre of the largest coalfield in the county; Gothenburg public-house system here first introduced in Scotland. Area, 6,343 ac.; pop. 28,000.

**Beatification**, in the R.C. Church an initial stage in the process of canonization.

**Beaton**, DAVID, CARDINAL (c. 1496–1546), for years ruled Scotland, and was a strong advocate of the Franco-Scottish alliance. He ordered an inquisition against Protestants, one of his victims being George Wishart; as the result of a conspiracy against him he was murdered.

**Beatrice**. (1) Florentine lady (1266–90), wife of Simone de' Bardi; beloved by DANTE, whose writings she inspired. (2) Principal character in Shakespeare's *Much Ado about Nothing*.

**Beattock**, vil., Dumfriesshire, Scotland (55° 18' N., 3° 26' W.); Caledonian Ry. jn.

**Beatty**, DAVID, 1ST EARL, of the North Sea (1871– ), first sea lord of the Admiralty (1919); entered navy (1884); served in Sudan (1896–8); in China (1900); naval secretary to first lord (1912); one of the youngest seamen to become an admiral (1910); knighted (1914); in command of 1st Battle-cruiser Squadron (1914–16); fought battle of DOGGER BANK (Jan. 24, 1915), in which *Lion*, his flagship, was incapacitated and forced to withdraw; with 5th Battle Squadron and his Battle-cruiser Squadron sighted von Hipper's five battle cruisers (May 31, 1916) and gave chase, thus

opening the battle of JUTLAND, in which he played the leading part; his tactics and those of Jellicoe's with the battle fleet at variance, and subject of much controversy—Beatty favouring Nelsonian action, Jellicoe, safety first; appointed to command the Grand Fleet (1916-19); lord rector of Edinburgh Univ. (1917); received surrender of German fleet in Forth (Nov. 1918); promoted admiral of the fleet (April 1919); received great ovation in Paris; awarded Order of Merit (June 1919); an earldom and grant of £100,000. Married (1901) Ethel, daughter of Marshall Field of Chicago.

**Beau**, leader of male fashion in the 18th and early 19th cents., the period of wig, patch, powder, enamelled snuff-box, satin knee-breeches, etc., which may be studied in Austin Dobson's *Ballad of Beau Brocade*. Bath, Tunbridge Wells, Harrogate, Scarborough, and other resorts, to which the rank and fashion flocked to take the waters, offered highly organized social enjoyments culminating in the assembly and presided over by the beau, who owed his position largely to his wit, but chiefly to his elegance.

One of earliest was RICHARD NASH (*fl.* 1700), who held sway over Bath as master of the ceremonies (1704-20); GEORGE BRYAN BRUMMELL (1778-1840), who was raised from lowly rank by the Prince of Wales and flourished until 1816, was accepted by royalties as their superior; the last of the beaux was the Frenchman ALFRED, COUNT D'ORSAY (1798-1852), who lived a good deal in England, where he initi-

ated modern dress, and was *arbitrarius elegantiarum* in France under the second empire.

**Beauce.** (1) Dist., Eure-et-Loir and Loir-et-Cher, France (48° 15' N., 2° E.); wheat, sheep. Area, 2,800 sq. m. (2) Dist., Quebec, Canada (45° 50' N., 70° 45' W.). Pop. 51,400.

**Beauchamp**, WILLIAM LYGON, 7TH EARL (1872- ), Liberal statesman; lord president of the Council (1910 and 1914); governor of New South Wales (1899-1901); lord warden of the Cinque Ports (since 1913); first commissioner of works (1910-14).

**Beauchamp**, WILLIAM MARTIN (1830- ), Amer. clergyman and ethnologist; works include *The Iroquois Trail* and *Aboriginal Occupation of New York*.

**Beauclerk** ('good scholar'), surname of HENRY I. of England.

**Beaufort.** (1) Tn., N. Carolina, U.S. (34° 44' N., 76° 38' W.); summer resort; fisheries. Pop. 2,500. (2) Tn., S. Carolina, U.S. (32° 27' N., 80° 40' W.); sea-island cotton; fertilizers; lumber and rice. Pop. 4,100.

**Beaufort**, HENRY, CARDINAL (1377-1447), legitimized son of John of Gaunt and Catherine Swynford; three times chancellor; instrumental in arranging peace between England and France (1444).

**Beaufort Scale**, numbers from 0 to 12 to indicate wind force from calm to hurricane, established by Admiral Beaufort in 1805; now obsolete.

**Beaufort Testimonial**, a prize of instruments or books bestowed annually on midshipman who passes first in navigation and pilotage for rank of lieutenant;

founded in 1860 to commemorate services of Admiral Sir Francis Beaufort, hydrographer of navy from 1829 to 1835.

**Beaufort West**, tn. and dist., Cape Prov., S. Africa ( $32^{\circ} 19' \text{ s.}$ ,  $22^{\circ} 34' \text{ E.}$ ); health resort; sheep farming. Pop. (dist.) c. 10,000; (tn.) c. 5,000.

**Beauharnais**, Fr. noble family, still represented. ALEXANDRE (1760–94), Vicomte de Beauharnais, married Josephine Tascher de la Pagerie, afterwards first wife of Napoleon; elegant manners of old *noblesse*; served Revolution as general of Army of Rhine (1792), but executed; daughter, HORTENSE, married Louis Bonaparte, and was mother of Napoleon III.; son, EUGÈNE DE BEAUHARNAIS (1781–1824), Fr. soldier, stepson and favourite of Napoleon I.; served in Napoleon's wars, and became prince of the empire and viceroy of Italy; brave and skilful general; retired to Munich after the fall of Napoleon.

**Beaujolais**, dist. of former prov. of Lyonnais, France ( $46^{\circ} 8' \text{ N.}$ ,  $4^{\circ} 30' \text{ E.}$ ); produces a Burgundy.

**Beaulieu**. (1) Par., Hampshire, England ( $50^{\circ} 48' \text{ N.}$ ,  $1^{\circ} 27' \text{ W.}$ ); abbey founded by King John (1204). Pop. 800. (2) Tn., Riviera, France ( $43^{\circ} 40' \text{ N.}$ ,  $7^{\circ} 23' \text{ E.}$ ); winter and yachting resort. Pop. 1,900.

**Beaulieu**, vil., Inverness-shire, Scotland ( $57^{\circ} 29' \text{ N.}$ ,  $4^{\circ} 27' \text{ W.}$ ); ruined priory; fishing; school of forestry. Pop. 900.

**Beaumarchais**, PIERRE AUGUSTIN CARON DE (1732–99), Fr. dramatist; wrote the famous *Mariage de Figaro* (1778), a satire of the old régime. He was a

witty intriguer and adventurer, and an immense favourite in France. He made a fortune by selling muskets to the Amer. insurgents against the British.

**Beaumaris**, tn., Anglesea, Wales ( $53^{\circ} 16' \text{ N.}$ ,  $4^{\circ} 6' \text{ W.}$ ); ruins of 13th cent. castle. Pop. 2,250.

**Beaumont**, city, on Neches R., Texas, U.S. ( $30^{\circ} 7' \text{ N.}$ ,  $94^{\circ} 5' \text{ W.}$ ); lumber centre; very rich oil fields. Pop. 20,600.

**Beaumont**, FRANCIS (1584–1616), and FLETCHER, JOHN (1579–1625), Eng. dramatists; described by Swinburne as 'the Dioscuri of Eng. poetry.' Beaumont was the son of Sir Francis Beaumont, judge of the Common Pleas, and was born at Grace Dieu, Leicestershire; educated at Broadgates Hall (now Pembroke Coll.), Oxford; left without taking a degree (1600), and entered the Inner Temple to read for the law. In London he made the acquaintance of Ben Jonson and other 'Mermaid' poets, wrote a translation of Ovid and some miscellaneous verses, and formed a friendship with Fletcher. The two poets lived together until Beaumont's marriage in 1613 with Ursula Isley, an heiress. Beaumont was buried in Westminster Abbey. Fletcher was the son of Richard Fletcher, afterwards Bishop of London; born at Rye; educated Benet (now Corpus Christi) Coll., Cambridge; like many univ. men of the period in search of fortune, he drifted into the service of the theatre. He died of the plague.

Of the fifty plays attributed to the two dramatists, *The Maid's Tragedy*, *Philaster*, *The Knight of the Burning Pestle*, and *The*

*Faithful Shepherdess* (by Fletcher alone) are considered the finest examples, and rank only below the masterpieces of Shakespeare. The general opinion seems to be that Beaumont had the loftier genius, while Fletcher had more constructive ability and excelled in wit and fancy. It is also known that the two were sometimes associated with other dramatists in the writing of plays—notably with Shakespeare, Massinger, Jonson, and Shirley. *The Two Noble Kinsmen*, sometimes attributed to Shakespeare, was largely the work of Fletcher, who collaborated with Massinger in the authorship of part at least of Shakespeare's *Henry VIII.*

Selection of their best plays in the series of *Mermaid Dramatists*; vol. vi. of *Cambridge History of English Literature.*

**Beaumont, JEAN BAPTISTE ARMAND LOUIS LÉONCE ELIE DE** (1798–1874), Fr. geologist, produced with Dufresnoy the *Carte Géologique de France* (1840); put forward a much-criticized theory as to the origin and comparative age of certain classes of mountains.

**Beaumont, SIR JOHN** (1583–1627), Eng. poet; brother of Francis Beaumont, the dramatist; his works were pub. after his death, in 1629. They include *Metamorphosis of Tobacco*, a mock-heroic poem; *Bosworth Field*, his best-known work; and several sacred and didactic pieces. Generally used the heroic couplet.

**Beaumont-Hamel, vil., Somme, France** (50° 7' N., 2° 40' E.); fortified by the Germans with such skill as to be deemed impregnable; ground honeycombed

with galleries and cellars; dug-outs, capable of accommodating a whole company, lined with timber and lighted by electricity; brilliantly captured by British in Somme battle (Nov. 13, 1916).

**Beaune, tn., dep. Côte d'Or, France** (47° 2' N., 4° 51' E.); anc. ramparts; 15th cent. hospital of St. Esprit; 13th cent. church; famous wines. Pop. 13,400.

**Beaunier, ANDRÉ** (1869– ), literary and dramatic critic; contributor to leading Fr. periodicals; is an intellectual of the traditionist school; very dogmatic in his views; has pub. many works, including *Les Idées et les Hommes* (1913–15), which contains an interesting autobiographical chapter.

**Beauregard, PIERRE GUSTAVE TOUTANT** (1818–93), Amer. Confederate general; received surrender of Fort Sumter (April 12, 1861); military writer.

**Beausobre, ISAAC DE** (1659–1738), Fr. pastor and historian, in high favour at court of Frederick the Great; wrote *Histoire Critique du Manichéisme* (1734).

**Beauvais, town, cap. of Oise, France** (49° 26' N., 2° 5' E.); besieged by English (1433); defended against Charles the Bold of Burgundy by female inhabitants under Jeanne Hachette (1472); fine incomplete Gothic cathedral, praised by Ruskin; Gobelin tapestry. Pop. 19,800.

**Beaver** (*Castor fiber*), largest European aquatic rodent, closely related to Amer. beaver (*C. canadensis*); valued for fur and as food. Fossil remains found in superficial deposits; *Trogontherium cuvieri* a giant Pleistocene genus. See RODENTIA.

**Beaverbrook**, BARON. See AITKEN, WILLIAM MAXWELL.

**Beaver Falls**, bor., Pennsylvania, U.S. (40° 46' N., 80° 20' W.); extensive implement manufactures. Pop. 12,000.

**Beaver Tree** (*Magnolia glauca*), a low-growing tree; root eaten by beavers, who use wood for building nests; bark, bitter and aromatic, of medicinal use.

**Beawar**, tn., Rajputana, India (26° 5' N., 74° 19' E.); important centre of cotton trade; many mills and presses. Pop. 21,900.

**Beazley**, CHARLES RAYMOND (1868- ), prof. of history. Birmingham Univ.; wrote *Voyages of Elizabethan Seamen*, *History of Russia* (to 1505), *Introduction to the Chronicle of Novgorod*, etc.

**Bebel**, FERDINAND AUGUST (1840-1913), Ger. Socialist, a leading member of Social Democratic party; he deprecated useless strikes. In 1870 he urged the government not to annex an acre of Fr. soil, and was imprisoned for high treason. His influence among Socialists was greater even than that of Marx.

**Beccafico**, Ital. name for garden warbler; so called from fondness of bird for figs, which form most of its food; esteemed a table delicacy on Continent.

**Beccafumi**, DOMENICO DI PACE (1486-1551), Ital. artist; son of a peasant; displayed remarkable talent for art from earliest years, and, having been well trained, executed great number of religious pictures for churches; famous for share in designing magnificent pavement in cathedral at Siena.

**Beccaria**, CESARE BONESANA (1735-94), Ital. political reformer

and economist; wrote on reform of currency and criminal law; his work had a lasting influence, through JEREMY BENTHAM, on the Eng. legal code.

**Beccles**, mrkt. tn., munic. bor., and par., Suffolk, England (52° 27' N., 1° 33' E.); printing works, maltings; manufactures agricultural implements. Pop. 7,100.

**Bêche de Mer** ('sea-spade'), European name of several species of echinoderms found in E. Indian and Australasian waters; table luxury of Eastern nations.

**Becher**, JOHANN JOACHIM (1635-82), Ger. chemist and adventurer; proposed construction of canal between Danube and Rhine; wrote on such varied subjects as metallurgy, physics, commerce, etc.; regarded by some as forerunner of many modern discoveries.

**Bechstein**, KARL (1826-1900), Ger. pianoforte-maker; his well-known instruments are of singularly full and powerful tone.

**Bechuanaland**, great dist., Brit. S. Africa, between Zambezi and Orange Rivers, and between S.W. Africa on the W. and Transvaal on the E. (18°-28° S., 20°-29° E.). Southern part, as far N. as riv. Molopo, was incorporated with Cape Colony in 1895; rest of district, extending to Victoria Falls on Zambezi, is a protectorate. Surface is part of great central plateau, with elevation of c. 4,000 ft.; rainfall varies from 25 in. in E. to 10 in. in W. Bechuanaland produces maize, millet; great herds of cattle. There seems to be plenty of underground water, and wells and irrigation might render soil very fertile. Gold occurs in



places. Cap. Mafeking; area of Cape part, 51,254 sq. m.; pop. 99,500 (including 15,000 whites). Area of Protectorate, c. 275,000 sq. m.; pop. 125,400.

Administration of protectorate is carried out by resident commissioner, under direction of high commissioner. Inhabitants belong to Bamangwato, Bagwaketse, Bakwena, and other tribes, each of which is ruled by native chief, under supervision of commissioner. Various missions have been established since beginning of 19th cent., and David Livingstone lived for a time at Kolobeng and carried on explorations. Bechuanaland was included in Brit. sphere of influence in 1885. See also the article on S. AFRICA.

**Beck, JAMES M.** (1861- ), Amer. lawyer and journalist, assistant attorney-general of U.S. (1900-3); has taken part in many important cases—e.g., the Cuban Filibusters, etc. Although of Ger. descent he wrote and spoke strongly on behalf of the Allied cause during the Great War, and his book *The Evidence of the Case*, and his *Case of Edith Cavell* in the *New York Times* (Nov. 1915), assisted greatly in fanning Amer. indignation against Germany.

**Becke, GEORGE LOUIS** (1848-1913), Australian author, celebrated for graphic stories of the South Seas—e.g., *Pacific Isles*, *The Tapu of Banderah*, etc.

**Beckenham**, urban dist., par., and tn., Kent, England (51° 24' N., 0° 2' W.), 7 m. S.E. of London; residential district. Pop. 31,600.

**Becker, KARL FERDINAND** (1775-1849), German philologist, taught that principles of com-

parative philology might be arrived at by deduction; views overthrown by inductive school led by J. Grimm.

**Becker, WILHELM ADOLF** (1796-1846), Ger. class. scholar; prof. of archæology at Leipzig; author of *Gallus* and *Charicles*, studies of daily lives of ancient Romans and Greeks, etc.

**Becket, THOMAS** (1118-70), Eng. churchman, son of a London merchant; became a member of the household of Archbishop Theobald, whom he accompanied to Rome (1143); was made Archdeacon of Canterbury (1154); Chancellor of England (1155). He now became chief adviser to Henry II., lived in great magnificence, and encouraged the king in all his warlike enterprises, himself taking a chief part in leading the Eng. army in France. In 1162, upon Theobald's death, Henry appointed him to the see of Canterbury, and from this time he gave himself thoroughly to ascetic practices, and became the Church's enthusiastic champion. Refusing his assent to the Constitutions of Clarendon, he was exiled, but returned in 1170. Some hasty words which Henry let fall were acted upon by certain of Becket's enemies, and Becket was murdered in his own cathedral. He was canonized (1172), and his shrine became a noted place of pilgrimage, as related in Chaucer's *Canterbury Tales*.

*Lives of Becket* by Robertson (1859), Morris (1885), Hutton (1910); play by Tennyson (1884).

**Beckford, WILLIAM** (1709-70), Eng. merchant; M.P. for City of London and twice lord mayor;

a strong supporter of John Wilkes; commended by Chatham for speech made in response to a rebuke from George III.; monument in the Guildhall.

**Beckford, WILLIAM** (1760–1844), Eng. author; son of above; inherited a great fortune, most of which he squandered on building schemes. Famous as author of *Vathek* (1782), a mysterious Oriental romance, characteristic product of Romantic movement in England. He also wrote several other books, mainly on his continental travels.

**Becque, HENRI FRANÇOIS** (1837–99), Fr. dramatist; produced among other plays *L'Enfant Prodigue*, *Les Corbeaux*, etc.

**Becquerel, distinguished Fr. family of scientists.** (1) **ANTOINE CÉSAR** (1788–1878), physicist, made many important discoveries in magnetism, electro-chemistry, etc. (2) **ALEXANDRE EDMONDE** (1820–91), his son, was prof. of physics, and made valuable researches on light, etc. (3) **ANTOINE HENRI** (1852–1908), son of preceding, was the discoverer of radio-activity; joint winner of Nobel Prize (1903).

**Becquerel Rays.** See under RADIO-ACTIVITY.

**Becse, O, tn., Hungary.** See O BECSE.

**Beckerek.** (1) **NAGY BECSKEREK, tn.,** formerly Hungary, now Rumania (45° 23' N., 20° 25' E.); extensive trade in grain. Pop. 26,000. (2) **KIS BECSKEREK, tn.,** Rumania (45° 50' N., 21° 3' E.). Pop. 4,000.

**Bed, article of furniture for sleeping upon.** Ancient Egyptian beds were high, and were ascended by steps; early Gr. beds

consisted of a wooden frame with head-board, and across the frame bands of hide were stretched; at a later period the frames were richly inlaid, and the bed coverings were handsomely embroidered. In Europe the bed developed from the simple pallet to the hearse-like structure which is familiar to all visitors to show-places where royal beds are among the curiosities. These unhealthy erections, with little modification, lasted well on into the Victorian era, when they were replaced by metal frames. There is now a widespread tendency to revert to the use of wooden frames, of a plain and light character.

**Bed of JUSTICE** (Fr. *lit de justice*), use of prerogative of Fr. monarch to enforce, as supreme power in state, registration of his edicts by recalcitrant *parlements*; supposed to be named after cushioned throne on which king sat on those occasions.

**Bed, GEOLOGICAL.** See under STRATUM.

**Bed-bug.** See BUG.

**Bedchamber, OFFICIALS OF THE.** The chief is titular functionary—the *Groom of the Stole* in case of male ruler, *Mistress of the Robes* in case of female ruler; next in rank are *Lords or Ladies of the Bedchamber* (to king or queen regnant respectively), and beneath them grooms or bedchamber women; lucrative and much-coveted posts. *The Bedchamber Question* (1839), when Queen Victoria refused to allow Peel as prime minister to dispose of these posts, resulted in his refusing to form a cabinet.

**Beddard, FRANK EVERS** (1858–), Eng. zoologist and biolo-



gist; accompanied *Challenger* expedition as naturalist; prosector to Zoological Soc.; pub. *Animal Coloration, Textbook of Zoogeography*, etc.

**Beddgelert**, par. and vil., Carnarvonshire, Wales (53° 1' N., 4° 6' W.), tourist summer resort; copper mines, slate quarries; group of stones said to mark grave of GELERT. Pop. 1,200.

**Beddoes**, THOMAS LOVELL (1803-49), Eng. dramatic poet, b. at Clifton; nephew of Maria Edgeworth; author of *The Improvisatore*, *The Bride's Tragedy*, and a posthumous play, the fantastic *Death's Jest-Book*. His plays are inspired by the Elizabethans, and some of his lyrics, which are of considerable beauty, betray the influence of Shelley. He was very unequal in quality, and too morbidly engrossed in phenomena of death and the charnel-house to become popular.

**Bede**, or BÆDA (c. 673-735), Eng. historian; usually called 'the Venerable'; author of the *Ecclesiastical History of the English Nation*, written 731, in the preface of which he gives the history of his own life. In early youth he was placed under care of Benedict Biscop, Abbot of Wearmouth; later under that of Ceolfrith, Abbot of Jarrow, where he spent remainder of his life. There he was buried, but his bones were removed to Durham during the 11th cent. He has been called 'the father of Eng. history,' and was undoubtedly the most learned Englishman of his time and chief source of O.E. history. Amongst other works he wrote a *History of the Abbots*, and a scientific treatise, *De Natura Re-*

*rum*, based on Pliny and Isidore. See Browne, *Venerable Bede*.

**Bede**, CUTHBERT (1827-89), pseudonym of EDWARD BRADLEY, Eng. clergyman and humorist; chiefly remembered for *Adventures of Mr. Verdant Green, an Oxford Freshman*.

**Bédegar**, Fr. name for sponge-like gall seen on eglantine, etc., produced by punctures of insects, especially *Cynips rosæ*.

**Bedesman**, a pensioner whose duty it was to pray for the souls of others. In Scotland the king's bedesmen, who wore blue gowns and metal badges, were permitted to beg throughout the kingdom; not appointed after 1833.

**Bedford**. (1) Co. tn., Bedfordshire (52° 8' N., 0° 28' W.), on Ouse; important for its educational institutions, some of which originated in the gift of Sir William Harpur (1561); grammar school, one of the leading public schools, founded by Edward VI. (1552); statue and relics of John Bunyan; agricultural implements, lace, straw-plaiting. Pop. 39,200. (2) City, Indiana, U.S. (38° 53' N., 86° 32' W.); stone quarries. Pop. 8,716.

**Bedford**, EARLDOM AND DUKE-DOM OF. JOHN PLANTAGENET, Duke of Bedford (1389-1435), third son of Henry IV., was created Duke of Bedford by his brother, Henry V., in 1414. On Henry's death (1422) he became regent of England, and continued Henry's work of conquest in France, forming an alliance with the Duke of Burgundy, whose sister he married. Stemming the tide of disasters which followed the siege of Orleans, he crowned Henry VI. king at Paris (1431);

but the English continued to lose ground, and after an abortive attempt to arrange terms of peace, Bedford died at Rouen, without legitimate issue.—**GEORGE NEVILL** (1457–83), son of Earl of Northumberland, was created Duke of Bedford (1470), but was degraded from the rank after his father's attainder and death.—**JASPER TUDOR**, (1430–95), uncle of Henry VII., was created Duke of Bedford (1485), but died without legitimate issue.—**JOHN RUSSELL**, Earl of Bedford (1486–1555), was a favourite of Henry VIII., acted as diplomatic envoy on the Continent, and held high offices of state under Henry VIII., Edward VI., and Mary.—**FRANCIS RUSSELL**, 2nd Earl of Bedford (1527–85), was a prominent statesman under Elizabeth. He was succeeded by his grandson, **EDWARD** (1572–1627), who died without issue.—**FRANCIS RUSSELL**, 4th Earl of Bedford (1593–1641), cousin of 3rd earl, was a leader of the Parliamentarians, dying in the middle of the struggle; played a great part in the drainage of the Fens, called the **BEDFORD LEVEL**.—His son **WILLIAM** (1613–1700) fought latterly on the side of the king in the Civil War, and was created Duke of Bedford (1694). The title descended to his grandson **WRIOTHESLEY** (1680–1711), who was succeeded by his son **WRIOTHESLEY** (1708–32), succeeded by his brother **JOHN RUSSELL** (1710–71), 4th Duke of Bedford, a prominent politician, a cabinet minister under Pelham, Bute, and Grenville, Viceroy of Ireland (1756–61), and holder of many other public offices.—**FRANCIS**

**RUSSELL**, 5th Duke of Bedford (1765–1802), grandson of 4th duke, was a friend of George IV., a leading politician, and much interested in agriculture. His brother **JOHN** (1766–1839) succeeded, and from him the title descended to his son **FRANCIS** (1788–1861), and grandson **WILLIAM** (1809–72). The latter was succeeded by his cousin **FRANCIS CHARLES HASTINGS** (1819–91), the title after his death going to the grandson of the 6th duke, both of whose sons, **GEORGE WILLIAM FRANCIS SACKVILLE RUSSELL** (1852–93), and **HERBRAND ARTHUR RUSSELL** (1858– ), succeeded in turn to the title, the latter being interested in natural history, and president of Zoological Society.

**Bedford Level**, a tract of several hundred thousand ac. in the Fen district of England, which was reclaimed from swamp by the 4th Earl of Bedford, who was promised 95,000 ac. of the land reclaimed as payment for draining the whole (1634). The work, though interrupted by the Civil War, was completed successfully by Vermuyden, a Dutch engineer.

**Bedfordshire**, co., England, bordering on Huntingdon, Northampton, Buckingham, Hertford, Cambridge (52° 4' N., 0° 24' W.); about 36 m. long, 21 broad; mainly consists of fertile clayey plain, undulating and well wooded, watered by Ouse and tribs., and bounded on s. by Dunstable and Luton Downs, continuations of Chiltern Hills. County is partly devoted to sheep grazing, partly to market gardening, partly to corn growing; manufactures: agricultural machinery, straw

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plaiting, pillow lace; produces phosphate of lime and fuller's earth; co. tn., Bedford; ten mrkt. tns.; Watling Street passes through county, and there are other traces of Roman occupation; many old churches, affording fine examples of Saxon, Norman, and later architecture. Area, 480 sq. m.; pop. 194,600. The co. is (for eccles. purposes) an archdeaconry of Ely.

**Bedfordshire and Hertfordshire Regiment**, raised by James II. in 1688 and known as 16th Foot; served in William III.'s Flanders campaign; at Blenheim suffered heavy losses; at siege of Lille, Sergeant Littles swam across river with a hatchet, and in face of the enemy cut the fastenings of the drawbridge. In 1782 regiment received county title. War honours up to Great War: Namur (1695); Blenheim; Ramillies; Oudenarde; Malplaquet; Surinam; Chitral; and S. Africa (1900-2). In Great War it numbered four regular and special service battalions (including B. and H. Militia), the T.F. battalion, three garrison battalions, and two transport workers battalions.

1914.—1st Batt. of Regulars formed part of 5th Division (15th Infantry Brigade); rearguard work at Wasmes, Givenchy, where after hard fight driven from trenches; 2nd Batt. part of 7th Division; fought magnificently around Gheluvelt; withdrew in good order.

1915.—2nd Batt. conspicuous at Neuve Chapelle; 8th (Service) Batt. at Loos supporting attack between Hulluch and Chalk Pit; subsequently in Ypres salient.

1916.—In battle of Somme, 7th Batt.<sup>1</sup> in successful operations round Mametz (July); 2nd Batt. (89th Brigade) attack on Montauban (July); Trones Wood, 8th Batt. in heavy fighting near Ginchy (Sept.); co-operated with Guards in assault on Quadrilateral near Bouleux Wood (Sept. 15); later at Thiepval and at Schwaben Redoubt. 1st Batt. saw hard fighting in Lesbœufs (Sept.) and battle of Ancre (Oct.); 4th Batt. in advance on Beaucourt sector.

1917.—8th Batt. in attack on Hindenburg Line s.w. of Cambrai; heavily engaged near Ribecourt; later at Villers Plouich. 2nd Batt. conspicuous in second Somme battle, delivering half a dozen successful counter-attacks in Maissemy-Villecholes region. 7th Batt. also engaged; counter-attack at Jussy. Other battalions in fighting in Caillouel district. 7th Bedfords drove enemy from Babœuf village. 10th Batt. (63rd Division) in vicinity of Albert badly cut up by machine-gun fire. 2nd Batt. defended n. part of Wytschaete-Eloi line in battle of Lys (April-May).

1918.—2nd Batt. took part in capture of Albert by Rawlinson's Fourth Army, and in fighting at Guilleumont. This and other battalions were in battle of Selle River (Nov.), especially in neighbourhood of Mormal Forest.

**Bédier, CHARLES MARIE JOSEPH** (1864— ), Fr. writer and member of Fr. Academy (1920); prof. of mediæval Fr. language and literature at Collège de France; has rendered invaluable service to Fr. literature and mediæval studies generally by researches

into origin of *Chansons de Geste*; has contributed to the series *Etude et Documents de la Guerre*.

**Bedivere**, SIR, knight of King Arthur's Round Table; appears in Wace, Robert of Gloucester, Malory, etc., and in Tennyson's *Idylls of the King*.

**Bedlam**, generic name for lunatic asylums, derived from the name Bethlehem Hospital, Bishopsgate Street, London, founded as a priory by Sheriff Simon Fitz Mary in 1247, and used as the first lunatic asylum in England about a hundred years later; it was transferred to Moorfields in 1675, and finally to St. George's Fields, Lambeth.

**Bedlington**, tn., on Blyth, Northumberland, England (55° 7' N., 1° 38' W.); coal, iron, nails, chains; gives name to the Bedlington terrier. Pop. 25,000.

**Bedloe's Island**, or LIBERTY ISLAND, New York harbour, U.S. (40° 41' N., 74° W.); on it was erected Bartholdi's statue of Liberty, presented by France to America on the centenary of independence. See BARTHOLDI.

**Bedmar**, ALFONSO DE LA CUEVA, MARQUIS DE (1572-1655), Bishop of Oviedo, cardinal and governor of Netherlands; his plot against Venice (1618), subject of Otway's *Venice Preserved*.

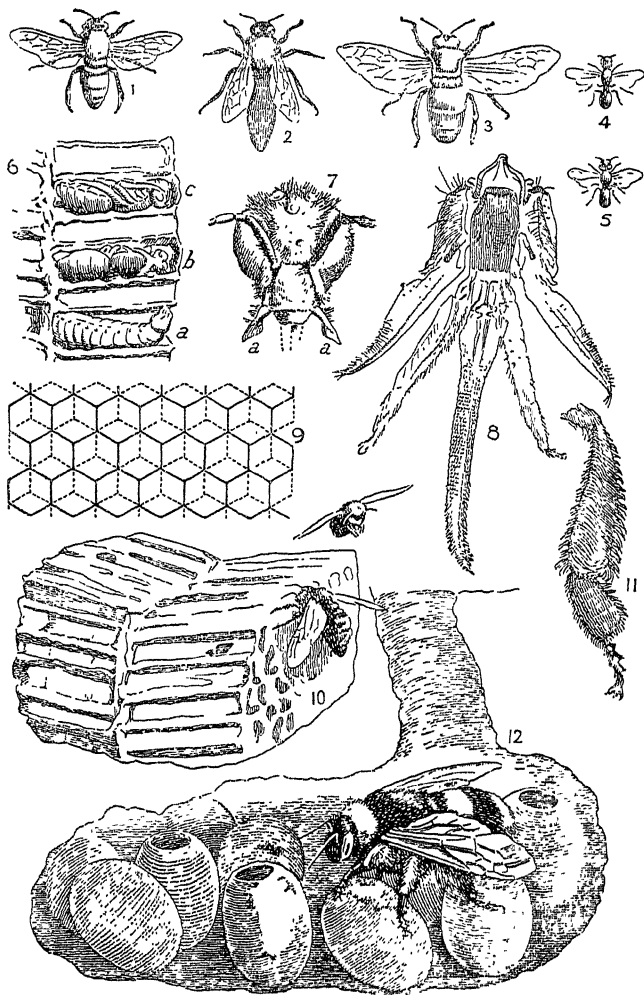
**Bedouins** (Arab, 'dwellers in the open land'), name given to Arab tribes who inhabit the desert; of noble, regular physique; wild and warlike, and of primitive hospitality; played an important part in the Great War. See ARABIA.

**Bed-sore**, form of ulceration or gangrene caused, in persons confined to bed, by prolonged pres-

sure, usually over a bony prominence, especially if the part be moist with perspiration, urine, or discharge from wound; interference with nerve supply of the skin and general debility predispose strongly to bed-sores. They can be prevented by regularly changing the position of the person, by cleanliness and keeping the skin on prominent parts dry —e.g. by sponging with water and then rubbing with methylated spirits, which is then allowed to dry on the skin, or dusting with boracic powder. A water-bed is usually recommended for very helpless patients.

**Bedworth**, tn., Warwickshire, England (52° 29' N., 1° 29' W.); coal, iron. Pop. 9,600.

**Bee** (*Anthophila*), a family of hymenopterous insects having feather-like hairs on head and body; mouth parts modified for sucking nectar from flowers; first legs possess mechanism for cleaning antennæ, third legs broadened, and (in workers) modified for gathering pollen; like other Hymenoptera they undergo complete metamorphosis. From primitive 'solitary' species, of curious nesting habits, have evolved the social bees with two kinds of females, reproductive *queens* and, ordinarily, sterile *workers*, the Brit. hive bee (*Apis mellifica*), domesticated from ancient times, being the common and most highly specialized representative. The differentiation of labour in the wonderful organization of the hive-bee society is less marked in the *humble bees* (*Bombus*), where the queen, in addition to her egg-laying functions, also assists the workers.



### Hive Bees and Humble Bees.

1. Hive Bee (worker). 2. Queen. 3. Drone. 4. *Prosopis signata*. 5. *Prosopis dilatata*. 6. Portion of comb (a, larva; b, c, pupa) 7. Head of Bee (a, a, mandibles) 8. Tongue of Bee. 9. Plan of cells 10. Piece of finished comb. 11. Hind leg of worker, showing pollen basket. 12. *Bombus terrestris* and nest.

The hive bee swarms in early summer. The workers, after a great commotion, having stuffed themselves with honey and loaded their legs with a resinous substance called *propolis*, fly with a fertilized queen to form a new colony. The workers settle on the proposed site, usually in a hive, and wait for a day till the temperature has risen sufficiently to enable them to exude small plates of wax from eight pockets on the lower side of abdomen. After the wax has been kneaded by the jaws of the workers it is fixed at the top of the hive, and the construction of the hexagonal cells proceeds till the *comb* is completed. Egg-laying now begins, most cells receiving fertilized (worker) eggs, others, built larger for the purpose, parthenogenetic (*drone*) eggs, the queen probably instinctively regulating fertilization. While the eggs in the drone cells develop into *drones*, stingless males, whose sole function is that of sex, the fertilized eggs give rise to workers or queens according to the food given to the grubs. While the worker grubs are fed with pollen and honey, those destined by the community to develop into queens are in specially built cells, 'royal cradles,' fed with a more nutritious preparation called 'royal jelly.' Should there be no queen, a new one is developed by the workers by feeding a worker grub on 'royal jelly.' The entire development of a queen, from egg through grub-pupa stage to adult, requires 16 days, that of a worker 21 days, and of a drone 24 days. The older workers gather the honey while the

younger ones are engaged in various duties inside the hive, feeding the grubs, ventilating the hive, keeping it clean, repairing cells with *propolis*, fighting alien bees, and destroying the surplus drones, if the hive has a breeding queen. The virgin queen kills her rivals on returning to the hive after having engaged on her nuptial flight, fertilization occurring in mid-air by the strongest and best-flying drone. If a new colony is to be founded, the nuptial flight takes place, and the first queen escapes along with a band of workers. Honey is stored in large quantities for winter consumption.

*Bee Keeping.*—Bees are most important domesticated animals, not only being providers of honey, but also indispensable for fertilizing flowering plants which are themselves adapted to the insects in the same measure as the latter are modified for collecting nectar. From the earliest times, when a hollowed tree served as a hive, to the straw *skep*, and, finally, to the modern scientific bee farm (*apiary*) of N. America, with its annual harvest of more than 100,000 lb. of honey, many improvements in bee keeping have led to the latter result. These improvements have been the wooden frame, the artificial comb foundation, and other appliances to direct and aid the bees in completing the comb, the centrifugal honey extractor, which enables the bee-keeper to use the same comb again, and, above all, a greater knowledge of the bees and their diseases. Many of these can be prevented, the most destructive being *foul brood*,

dysentery, and the Isle of Wight disease.

**F. R. Cheshire**, *Bees and Bee-keeping* (London, 1885-88); the *British Bee Journal*, weekly since 1873; the *Bee-keeper's Record*, pub. monthly since 1882.

**Beech** (*Fagus*), genus of trees of temperate regions, containing about 16 species—e.g., *F. sylvatica* (Europe), *F. americana* (Eastern N. America), *F. antarctica*, and the evergreen *F. betuloides* (Tierra del Fuego). Timber is hard; used for chairs and 'bent-wood' furniture of Hamburg and Vienna.

**Beecham**, **SIR THOMAS** (1879-), Eng. musical composer, conductor, and operatic impresario. Has done much by the establishment of a notable opera company to spread musical culture and to educate and elevate the public taste in music.

**Beecher**, **HENRY WARD** (1813-87), Amer. preacher and abolitionist; pastor of Plymouth Congregational Church, Brooklyn; sermons marked by great originality and eloquence. He was appointed editor of the *Christian Union* (1870), and visited England in 1863 and 1886, where vast audiences were attracted by his eloquence. He pub. *Seven Lectures to Young Men* (1844), *Life Thoughts* (1858), *Life of Christ* (1871), etc.

**Beecher**, **LYMAN** (1775-1863), Amer. preacher; sometime president of Lane Theological Seminary, Cincinnati; enjoyed great popularity as a preacher; *Collected Works* 3 vols. (1852); *Autobiography*, 2 vols. (1863-4). He was the father of Henry Ward Beecher, Mrs. H. B. Stowe, Edward, Charles, Thomas, and Catherine Esther Beecher, all of

whom obtained distinction either as writers or preachers.

**Beechey**, **FREDERICK WILLIAM** (1796-1856), Eng. explorer; after serving in navy and later in explorations under Franklin and Admiral Smyth, spent three years exploring under his own flag, and pub. (1831) *Voyage to the Pacific and Bering's Strait to Co-operate with the Polar Expeditions, 1825-28*; rear-admiral (1854).

**Beechey**, **SIR WILLIAM** (1753-1839), Eng. artist; portrait-painter to Queen Charlotte and other members of the royal family; A.R.A. (1793); R.A. and knighthood (1798).

**Beechey Island**, Brit. N. America (74° 40' N., 92° W.).

**Beeching**, **HENRY CHARLES** (1859-1919), Eng. clergyman and poet; Canon of Westminster (1902); Dean of Norwich (1911); has pub. *In a Garden and Other Poems*, *Provincial Letters and Other Papers*; has edited *A Paradise of English Poetry*, *Lyra Sacra*, besides editions of Milton, Crashaw, Herrick, etc.

**Beechworth**, tn., Victoria, Australia (36° 22' S., 146° 41' E.); gold mining. Pop. 3,400.

**Bee-eaters**, small family of bright-coloured birds (*Meropidae*) which catch their insect food on the wing; they inhabit the Old World; *Merops apiaster* is a rare Brit. visitor.

**Beef** (old pl. **BEEVES**), flesh of ox, bull, or cow, and, formally, those animals themselves; joints cut by Eng. butchers are sirloin, rump, aitchbone, buttock, mouse buttock, veiny parts, thick flank, thin flank, shin, fore ribs, middle ribs, chuck ribs, leg-of-mutton piece, brisket, clod, neck, cheek.

**Beef-eater.** (1) Hypothetical original O.E. retainer; Yeoman of the Guard, a body first formed by Henry VII.; Tudor costume still worn by warders of Tower of London. (2) A bird, also called 'ox-pecker,' like starling; African; alights on backs of cattle and picks larvæ and grubs.

**Beelzebub**, a name of uncertain derivation. In 2 Kings 1 we find mention of Baal-zebub, the god of Ekron; while in Mark 3: 22-7 Beelzebub is identified with the devil, and of Christ it is said by the scribes, 'He hath Beelzebub, and by the prince of the devils casteth he out devils.' In Milton's *Paradise Lost* (Bk. ii.) Beelzebub ranks as second to Satan. See BAAL.

**Beer.** See BREWING.

**Beer Acts.** See under LICENSING LAWS.

**Beerbohm**, MAX (1872- ), Eng. essayist and caricaturist, is a half-brother of Sir Herbert Tree; his literary work is marked by whimsical humour and by delightfully easy style; and as a caricaturist he is a master of biting portraiture. He pub. *The Works of Max Beerbohm, The Happy Hypocrite, The Poets' Corner, Fifty Caricatures* (1913).

**Beernaert**, AUGUSTE (1829-1912), Belgian statesman, successively minister of agriculture and industry, minister of finance, and president of the cabinet; led the Catholic Democrat party; Nobel peace prizeman (1910).

**Beersheba**, now BIR-ES-SABA, vil., Palestine (31° 17' N., 34° 54' E.); region mentioned in O.T. as residence of Abraham and site of famous wells; its position in extreme S. of Judah gave rise to

phrase 'from Dan to Beersheba'—i.e., all Israel. During the Great War Beersheba was Turk. base of operations against Egypt; bombed by Brit. airmen, Dec. 1916; captured by General Allenby, Oct. 31, 1917.

**Beesley**, EDWARD SPENCER (1831-1915), Eng. historian and Positivist, editor of *Positivist Review*. He did much to remove middle-class prejudice against trade unionism.

**Beestings**, milk taken from cow after calving; much richer in albumin and salts than ordinary milk.

**Beeston**. (1) Tn., Nottinghamshire, England (52° 56' N., 1° 12' W.); silk, hosiery, lace, automobiles, cycles. Pop. 11,300. (2) Par., Cheshire, England (53° 8' N., 2° 44' W.); ruins of Norman castle. Pop. 300.

**Beeswax**, secretion of worker bees when forming honeycomb, of which it composes the cells; yellow, but may be bleached white; melts at 64° C.; soluble in chloroform and oil of turpentine.

**Beet** (*Beta vulgaris*), edible biennial, forming succulent taproot first season, flowering stem following year; numerous varieties—e.g., field beet, garden beet, mangold-wurzel. From certain varieties sugar is obtained; beginning made of cultivation in England. See SUGAR.

**Beet**, JOSEPH AGAR (1840- ), Eng. theological writer; was an original member of faculty of theol. in London Univ.; wrote a series of commentaries on St. Paul's Epistles.

**Beet-fly**, insect which in spring lays minute eggs on under surface of leaves of beet and mangold-wurzel; not very common



in Britain; the pest did much damage in 1880.

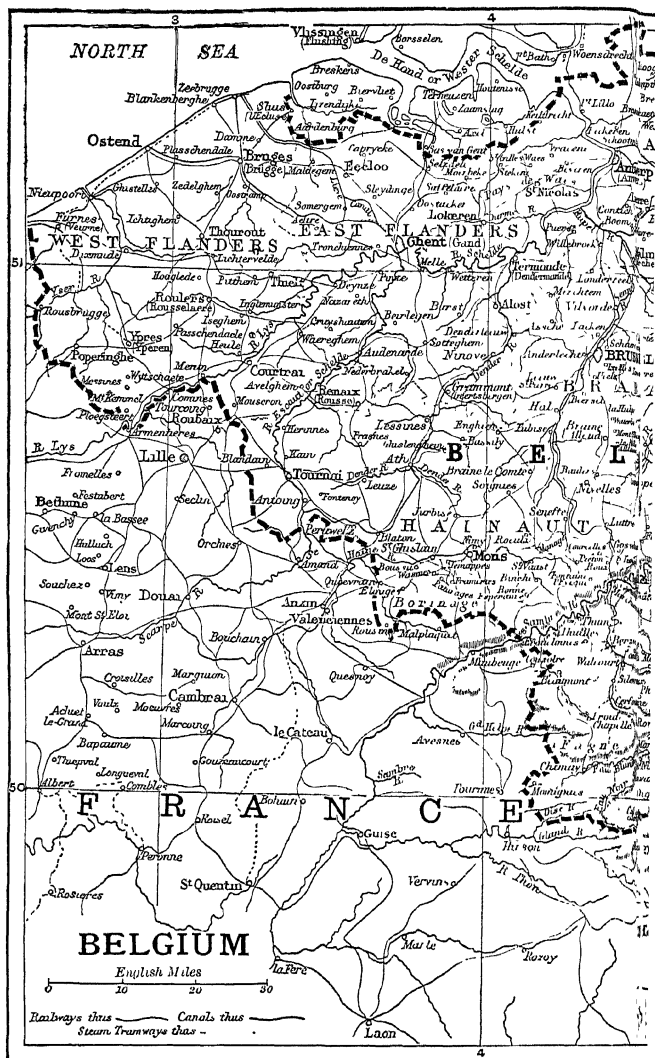
**Beethoven**, LUDWIG VAN (1770-1827), Ger. composer; born at Bonn; son of a tenor singer at the Elector of Cologne's court, a man of violent temper and drunken habits, with the natural result that the family suffered dire poverty during Ludwig's early years. The father, discerning the precocity of his son, was eager to turn his musical gifts to profit at the earliest possible date, and commenced the child's training at the age of five. By the time he was nine, however, the elder Beethoven could teach him no more, and he passed successively into the hands of another singer, Pfeiffer, Ries, Van den Eeden (the court organist), and his successor, Neefe. As early as 1781 Beethoven had acted as deputy to the latter; in 1783 he was made cymbalist at the Bonn theatre, and, in the following year, was given a court appointment under Neefe. In 1787 he visited Vienna, where he played before Mozart, and received a few lessons from him. But the illness of his mother, to whom he was greatly attached, and her subsequent death, put an end to these advantageous studies, and he returned to his work at Bonn and the charge of his father's household, of which he was the chief support. In his native town he had won the friendship of Count Waldstein, through whose instrumentality the elector was induced to send Beethoven again to Vienna (1792), where he quickly made a reputation for himself by his playing and extemporization.

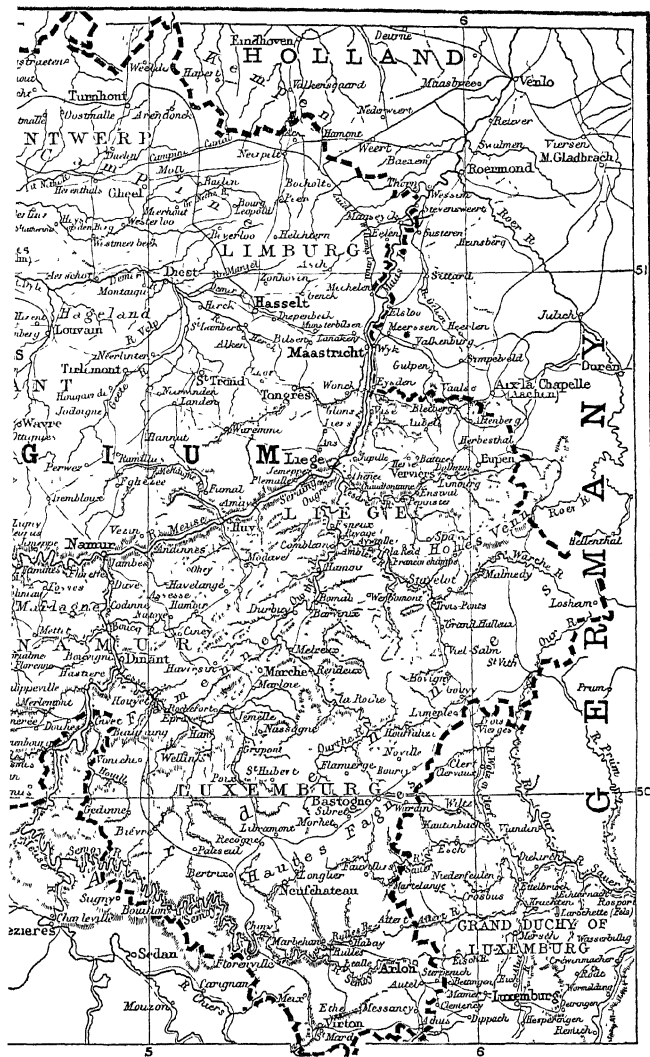
Vienna was destined to be his home for the remainder of his life, and immediately after settling there he placed himself under the tuition of Haydn. Beethoven, however, did not get on comfortably with his tutor, and was dissatisfied with his progress. He therefore took lessons from Schenk, and studied counterpoint later with Albrechtsberger, and the violin with Schuppanzigh. It was in Vienna, consequently, that all his chief works were composed, and in this great musical centre he formed many lasting friendships. Yet there was much in Beethoven that was calculated to destroy friendly relations, for, though a man of the most generous and noble character, he frequently treated his best and most intimate friends with inconsiderate rudeness and incivility. Perhaps some portion of this defect of character may have resulted from the deafness with which he had been afflicted since before he was thirty years of age, and which increased to such an extent that, from 1822 until his death, he could only be communicated with in writing. Yet some of his greatest compositions belong to this period.

To Beethoven's first period belong: first two symphonies, first 10 sonatas (including *Pathétique*, 1799, and *Moonlight*), string trios, first 6 string quartets, *Mount of Olives* (oratorio), and most of the sets of variations for pianoforte. Second period includes most of his greatest works—e.g., *Kreutzer Sonata* (violin and piano), 1803; 3rd *Eroica* Symphony, 1804; *Fidelio* (opera), 1805; *Appassionata Sonata*, 4th



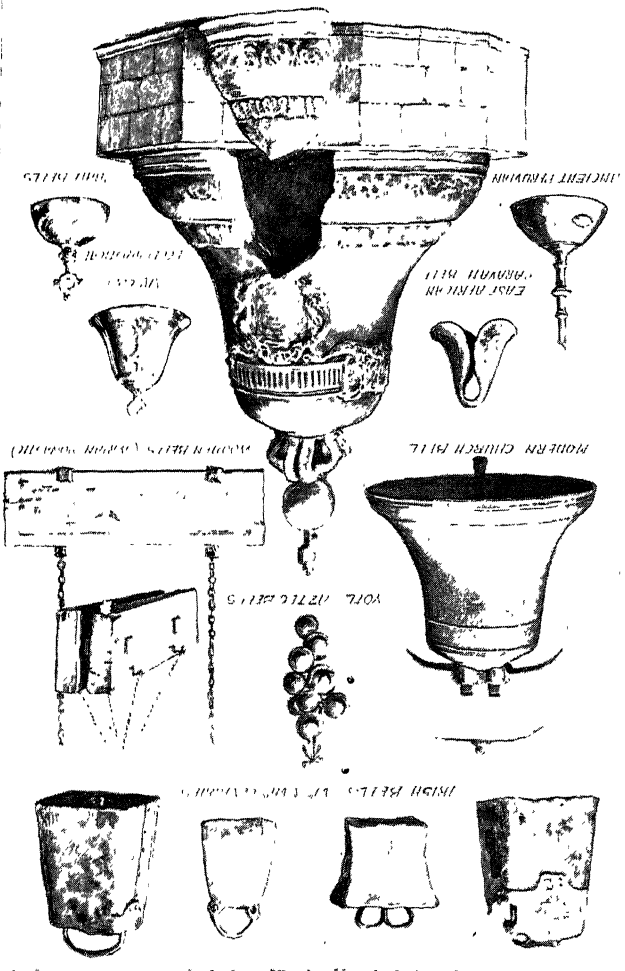
BEETHOVEN.





# VARIOUS TYPES OF BELLS

"15th CENTURY" IN THE BRITISH MUSEUM (1/55)



Symphony, and 32 Variations in C minor for Pianoforte, 1806; C minor (5th), and *Pastoral* (6th) Symphony, 1807; and G minor Pianoforte Concerto, 1807; Violin Concerto and *Lebewohl* Sonata, 1809; music to *Egmont* and trio in B $\flat$ , 1810; Symphonies 7 and 8, 1812. To the last period belong 9th (*Choral*) Symphony (1823 onwards); last 4 pianoforte sonatas, last 4 string quartets, *Missa Solemnis*, 2 overtures, and other minor works. The greatest musical composer of all time, Beethoven's earlier works were akin to Mozart and Haydn; his later works marked entirely new departures, characterized by amazing individuality of style and classical beauty and perfection of form.

Corder, *Beethoven* (1912); Grove, *Beethoven and his Nine Symphonies* (1896); Thayer, *Life of Beethoven*; Diehl, *Life* (1908).

**Beetle**, coleopterous insect. Black beetles are COCKROACHES, not true beetles. See the general article COLEOPTERA.

**Beetle Stones**, small ellipsoidal concretions of clay-ironstone found in coal measures; often aggregated round organic fragment; interior contracts and calcite fills cracks; radiating thread of calcite round centre suggests appearance of beetle.

**Beets**, NICOLAAS (1814-1903), Dutch author; wrote poems, critical essays, etc., but is chiefly famous as author of *Camera Obscura*, and a continuation—a collection of tales and sketches, largely of peasant life, distinguished for their graceful prose, vivid humour, and fidelity.

**Befana** (corruption of 'Epiph-

any'), a legendary old woman, who on Twelfth Night in Italy is supposed to bring toys, etc., to good children and ashes to bad; formerly her effigy was paraded in the streets on eve of Epiphany.

**Begas**, KARL (1794-1854), Ger. court painter, Biblical and portrait, a leader of the 'Nazarenes,' or Ger. pre-Raphaelites; painted *The Resurrection*, etc.

**Begas**, REINHOLD (1831-1911), Ger. sculptor, son of Karl Begas; his *Schiller* and other statues adorn Berlin; are distinguished for lifelike pose and expression of passion and thought.

**Bégasse**, the waste pulp left after extraction of the juice from the sugar cane; used as a fuel.

**Begg**, JAMES (1808-83), Scot. Presbyterian; a leader of the Disruption movement (1843); minister of Newington Free Church, Edinburgh.

**Beggar**, one who solicits and exists on charitable contributions. See VAGRANT.

**Beggars**, THE. See NETHERLANDS—*History*; and GUEUX, LES.

**Beghards**, lay male confraternity of 13th and 14th centuries; name was latterly applied to wandering mendicants who made religion a cloak for begging; probable origin of the Eng. word 'beggar.'

**Bégin**, LOUIS NAZARE (1840-), R.C. Archbishop of Quebec, cardinal since 1914; author of *Aide-Mémoire*, a chronology of Canadian history (1886).

**Bègles**, tn., Gironde, France (44° 48' N., 0° 34' W.); practically part of Bordeaux and shares in its prosperity. Pop. 14,000.

**Begonia**, family of succulent

herbs; native of tropics; for horticultural purposes, classed under five sections; most popular section is the 'tuberous-rooted,' possessing gorgeous blossoms of all colours except blue.

**Béguines**, lay sisterhoods founded at Liège about 1170 by a priest named Lambert le Bègue. Béguines were not required to take vows, but expected to devote their whole time to good works; movement very popular, and spread rapidly, but in later times they degenerated into mendicants. Modern béguinages are practically almshouses except in Belgium, where they retain their sacerdotal character, that of St. Elizabeth, Ghent, being especially famous for good works.

**Behar**. (1) Part of lieutenant-governorship of Behar and Orissa, Bengal, India; 'Garden of India' in N.; cereals, indigo; subject to famine; at Monghyr is one of largest cigarette factories in world. Area, 42,361 sq. m.; pop. 23,753,000. (2) Chief tn. of above (25° 11' N., 85° 31' E.); silk, cotton, muslin goods; Buddhist, Brahmanical, and Mohammedan ruins. Pop. 35,200.

**Beheading**. See CAPITAL PUNISHMENT.

**Behemoth**, the hippopotamus, described in Job 40 : 15.

**Behera**, prov., Lower Egypt; cotton. Area, 1,725 sq. m.; pop. 800,000. Cap. Damanhur.

**Behistun**, vil., Ardelan, Persia (34° 24' N., 47° 28' E.); famous rock (1,700 ft.) with cuneiform inscriptions 300 ft. above base.

**Behn**, ERNST (1830-84), Ger. geographer and statistician; was joint compiler of *Bevölkerung der Erde* (1872-84).

**Behmen**, JACOB. See BOEHME.  
**Behn**, MRS. APHRA (1640-89), Eng. novelist and dramatist; probably first Eng. professional authoress; visited W. Indies in childhood, and hence her best novel, *Oroonoko, the Royal Slave*; employed by Charles II. as a spy in Holland; plays include *The Forced Marriage*, *The Town Fop*, *The Amorous Prince*. Work lively, witty, and coarse.

**Behring**, EMIL VON (1854-1917), Ger. physician and bacteriologist, was the discoverer of anti-toxin for diphtheria and tetanus; director of Hygienic Institute, Marburg (1895-1917); Nobel prizeman (med.) 1901.

**Beibars**, two Mameluke rulers of Egypt. BEIBARS I. (d. 1277), distinguished himself in defeat of Crusaders under St. Louis, and extended dominions of Egypt into Syria and Armenia. BEIBARS II. became unpopular on account of a famine, and was strangled by a rival (1310).

**Beijerland**, or BEYERLAND, isl., Holland, crossed by 51° 47' N., and 4° 30' E.; contains several large townships.

**Beilan**, tn. and pass (alt. 1,800 ft.), Syria (36° 30' N., 36° 13' E.); pass thought to be ancient *Syrian Gates*; town is a summer resort. Pop. 5,000.

**Beilby**, SIR GEORGE THOMAS (1850- ), Scot. scientist and inventor, of Edinburgh; an authority on coal economy and smoke prevention, also on shale oil industry, and founder in this country of synthetic production of alkali cyanides. Chairman, Royal Technical Coll., Glasgow; knighted (1916), appointed fuel director (1917); contributor to

*Proceedings of Royal Soc., Chemical Society, etc.*

**Beilstein**, FRIEDRICH KONRAD (1838–1907), Russian chemist; prof. of chem. Petrograd Technological Institute (1866–96); investigator of benzine, naphtha, petrol, etc.; his *Handbuch der Organischen Chemie* is famed.

**Beira**. (1) Prov., Portugal (40° N., 7° 35' W.); mountain range; forest, heath with fertile plain; cereals, fruit, sheep farming; mineral springs. Area, 9,200 sq. m.; pop. 1,550,000. (2) Dist., Port. E. Africa (20° S., 34° 30' E.); rubber and coconut trees. (3) Seapt., cap. of above; exports sugar, rubber, cotton, ivory; gateway to Mashonaland; railway communication with Cape Town via Bulawayo; new railway prospected between Beira and the Zambezi (1920). Pop. 7,800.

**Beirut**. (1) Seapt., Syria (33° 54' N., 35° 31' E.); univ., astron. observatory; silk goods, gold and silver thread; entrepôt for exports and imports of central Syria. Anc. Phœnician town; captured by Turks (16th cent.); entered by Allenby's 7th Division (Oct. 1918); placed under Fr. administration (Dec. 1919). (2) Vilayet, Syria. Area, 6,180 sq. m.; pop. c. 600,000.

**Beit**, ALFRED (1853–1906), S. African financier and philanthropist, partner Wernher, Beit, and Co., diamond merchants, Kimberley, and afterwards director of De Beers; friend and sympathizer of Cecil Rhodes, and shared with him censure of House of Commons for part played in Jameson Raid; founded chair of colonial history, Oxford; left

bequests to Cape Town, Johannesburg, Hamburg, and London Univ., and for extension of Cape to Cairo Railway.

**Beit-el-Fakih**, trading centre, prov. Yemen, Arabia (14° 35' N., 43° 22' E.); near Red Sea.

**Beith**, tn., Ayrshire, Scotland (55° 46' N., 4° 37' W.); important coal-mining dist.; woollen and cotton fabrics. Pop. 6,700.

**Beith**, JOHN HAY (1876– ), Scot. novelist (pen name, 'Ian Hay'); educated and afterwards master in Fettes Coll., Edinburgh; author of *Pip* (1907), *The Right Stuff* (1908), *A Man's Man* (1909), depicting Cambridge undergraduate life; *A Safety Match* (1911), *A Knight on Wheels* (1913), and the inspiring war group, *The First Hundred Thousand* (1915), *Carrying On* (1917), and *The Last Million* (1919); play, *Tillie of Bloomsbury* (1919). Served as captain in Great War, and won M.C. Subsequently engaged in war-lecture work in America; C.B.E. for services in the cause of Anglo-Amer. entente.

**Beja**. (1) Dist., Alemtejo prov., Portugal. Area, 4,000 sq. m.; thinly populated. (2) Chief tn. of above (38° 2' N., 7° 51' W.); castle and cathedral; manufactures pottery, leather, olive oil. Pop. 9,000.

**Bejant**, or **BEJAN**, mediæval term for freshmen at continental universities; still survives at Aberdeen and St. Andrews Universities, Scotland.

**Bejar**, fort. tn., prov. Salamanca, Spain (40° 23' N., 5° 44' W.); flannel and serge. Pop. 10,000.

**Béjart**, ARMANDE CLAIRE ELIZABETH (1645–1700), Fr. actress, wife of Molière, who wrote



many leading parts for her; outlived Molière, and married actor named Guérin.

**Bek**, ANTONY (d. 1311), Eng. ecclesiastic, Bishop of Durham (1283), and chief adviser in Scot. affairs to Edward I.; supported marriage of Prince of Wales to Maid of Norway, and afterwards the choice of John Balliol as King of Scots; made sovereign of Man by Edward II.; first bishop to be buried in Durham Cathedral.

**Beke**, CHARLES TILSTONE (1800-74), Eng. explorer and author; travelled in Abyssinia, Syria, Palestine, and Egypt; pub. *The Nile and its Tributaries* (1847), *The Sources of the Nile* (1860), *The British Captives in Abyssinia* (1865); his *Discoveries of Sinai in Arabia, and of Midian* appeared posthumously (1878).

**Békés**, towns, Békés co., Hungary. (1) BÉKÉS-GYULA (46° 46' N., 21° 8' E.), cap. of co.; cattle, corn, wine. Pop. 27,000. (2) BÉKÉS-CSABA (46° 40' N., 21° 5' E.); milling, hemp weaving; important ry. jn. Pop. 43,000.

**Bekker**, ELISABETH (1738-1804), Dutch poetess and novelist; wrote *Chants Populaires*, etc., and, in conjunction with Agatha Deken, novels, including *Cornelia Wildschut*.

**Bel**, signifying, as did BAAL, 'owner' or 'lord'; principal Babylonian deity, whose temple was in the sacred city of Nippur.

**Bel and the Dragon**, a book of the Apocrypha, in the Gr. and Lat. versions forming part of the Book of Daniel. The legends in the book extol Daniel's exposure of pagan chicanery.

**Bela**, tn., United Provinces,

India (25° 55' N., 82° 2' E.); agricultural produce. Pop. 7,000.

**Bela**. (1) III., King of Hungary (d. 1196), a great statesman, whose court was one of the most brilliant in Europe. Assisted the Serbs to institute a native dynasty. (2) IV. (1235-70), Hungarian king, in whose reign occurred the Tatar invasion of Hungary; a reformer and encourager of agriculture.

**Belaieff**, MITROPHANE PETROVICH (1836-1904), wealthy Russian who founded (1885) a publishing house at Leipzig for production of Russian music; instituted 'Russian Symphony Concerts' at Petrograd (1885).

**Bela Kun**. See KUN, BELA.

**Belasco**, DAVID (1862- ), Amer. dramatist, owner of Belasco Theatre, New York; has written and produced *Zaza* (1896), *Madame Butterfly* (1900), *Sweet Kitty Bellairs* (1903), *Girl of the Golden West* (1905).

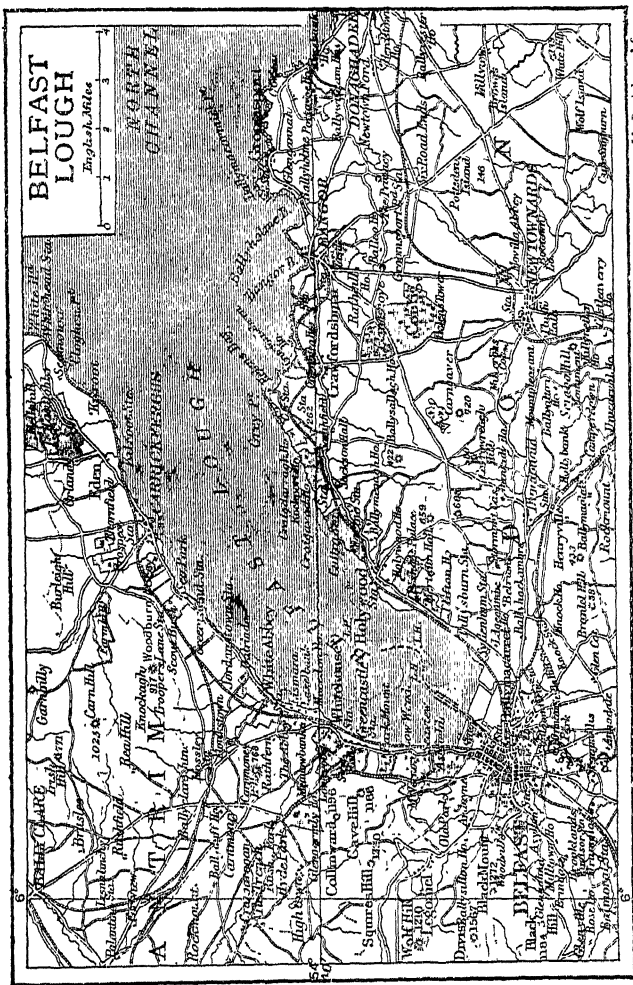
**Belbeis**. See BILBEIS.

**Belcher**, SIR EDWARD (1799-1877), Brit. admiral, commanded expedition in 1852 in search of Sir John Franklin; wrote *Last of the Arctic Voyages* (1855), etc.

**Belem**. (1) Tn., Portugal (38° 43' N., 9° 12' W.); suburb of Lisbon; monastery. (2) Tn., Venezuela (7° 8' N., 61° 35' W.). (3) Tn., Brazil (25° 9' S., 51° 34' W.). (4) Tn., Brazil (1° 28' S., 48° 24' W.); known as PARA. Pop. 275,200. (5) Tn., Paraguay (23° 33' S., 57° 8' W.).

**Belemnite**, internal skeleton of an extinct genus of CEPHALOPODA, allied to cuttle-fishes.

**Belfast**. (1) Largest town, Ireland (54° 36' N., 5° 55' W.); port and great commercial centre



of Ulster, on Belfast Lough, 12 m. from Irish Sea; headquarters of linen trade in U.K.; has also great shipbuilding yards, which have produced some of the largest steamships, including *Oceanic*, the ill-fated *Titanic*, and the *Britannic*, torpedoed (1916) off Greek coast while serving as a hospital ship. Industries include distilling, brewing, ironfounding, flour milling, bacon curing, making of rope, blacking, sailcloth, aerated waters; harbour very large and safe; there are four graving docks. There is a Prot. cathedral, begun in 1899; a R.C. cathedral; univ. (Queen's Univ., 1909—founded as Univ. Coll. in 1849); R.C. and two dissenting colleges. Public buildings include magnificent city hall, Ulster Hall, free library, museum. Belfast is centre of Prot. anti-Home Rule sentiment in Ireland. Has unenviable reputation for riots (1886, 1893, 1898, 1907, and 1920). Pop. 385,400. (2) Seapt., Maine, U.S. (44° 23' N., 69° 1' W.); iron goods, shipbuilding; pop. 4,600.

**Belfast Lough**, inlet, w. coast of Ireland (54° 42' N., 5° 50' W.); 12 m. long; residential villages on shores; Belfast stands at s.w. end.

**Belfort**. (1) Terr., E. France, dep. of Haut-Rhin (47° 38' N., 6° 53' E.); cereals, iron, machinery, cloth. Area, 235 sq. m.; pop. 101,000. S. of Vosges lies the pass *TROUÉE DE BELFORT*. (2) Fort. tn., E. France (47° 38' N., 6° 53' E.); important strategical position near Swiss frontier; high citadel; belonged for a time to Austria, but acquired by France in 1648; fortified by Vauban (1688); often besieged

in wars of 17th and 19th centuries; surrendered to Germans after three months' siege, Feb. 1871; *Lion of Belfort*, by sculptor Bartholdi, commemorates the siege; fortifications since rebuilt; fine church and *palais de justice*; industries include cotton spinning, tanning, brewing, machinery; considerable export and import trade; frequently bombed by Germans in Great War. Pop. 39,400.

**Belgæ**, inhabitants of *Gallia Belgica*, the dist. of Gaul between the Marne, Rhine, Seine, and North Sea; described by Cæsar as most warlike Germanic people.

**Belgaum**. (1) Dist., Bombay, India; cereals, sugar, tobacco. Area, 4,657 sq. m.; pop. 1,100,000. (2) Tn. in above (15° 51' N., 74° 31' E.); cotton mills; fort taken by British (1818); interesting Jain temples. Pop. 36,000.

**Belgian Coast**, OPERATIONS OFF. See DOVER PATROL.

**Belgian Congo**. See CONGO, BELGIAN.

**Belgiojoso**, tn., N. Italy (45° 9' N., 9° 19' E.); anc. castle in which Francis I. was imprisoned after his capture at the battle of Pavia (1525). Pop. 5,000.

**Belgiojoso**, CRISTINA, PRINCESS OF (1808–71), Ital. patriot and authoress; worked energetically to further plans of Cavour, and founded in Milan the patriotic journal *Italia*; wrote several historical works.

**Belgium**, kingdom, Europe (49° 30'–51° 30' N., 2° 32'–6° 7' E.), bounded n. by Netherlands, e. by Netherlands, Prussia, and Luxembourg, s. and s.w. by France, n.w. by North Sea; length, c. 170 m.; width, c.

108 m.; area, 11,373 sq. m. Surface is flat and low-lying except in s.e., where Ardennes rise to 2,000 ft.; coast districts, in some places below sea-level, protected by sand-dunes and dykes; along Dutch border is marshy tract called Campine, with woodland and good agricultural ground; drained by Scheldt and Meuse (Maas), with tribs.—of former, Lys, Dender, Durme, Rupel; of latter, Sambre and Ourthe. Climate resembles that of s. of England; rainfall varies from 28 to 40 in.

*History.*—Originally Belgium was inhabited by people of Celtic race, who were expelled by Germans; latter were in turn conquered by Romans, who remained here for several centuries, but were ultimately expelled by Franks; Belgium formed part of Charlemagne's empire; by Treaty of Verdun in 843 eastern provinces became duchy of Alsace-Lorraine, and western (see FLANDERS) fell to France; subsequently various principalities arose, and history was one of factions and rivalries between different families, towns, and provinces. Most of states were ultimately united under dukes of Burgundy, and in 1477 they passed to Habsburgs by marriage of Mary, daughter of Charles of Burgundy, to Maximilian, who later became emperor. Their son, Philip, governed Netherlands for a time, and was succeeded by his sister, Margaret of Austria, who was regent from 1507–30; under her nephew, Charles v., Emperor and King of Spain, those adopting Reformed religion were perse-

cuted, and country was formally united to Spain; he abdicated in 1555, whereupon his son, Philip II. of Spain, succeeded; he continued persecution of heretics, and during regency of his half-sister, Margaret of Parma, various outbreaks occurred against Spanish rule; Alva, sent to reduce rebels, accomplished his task with such cruelty that result was revolt of all NETHERLANDS in 1568; this ended in establishment of northern provinces as kingdom of HOLLAND, while southern region (Flanders) remained under Span. control. Belgium was given to Clara Isabella Eugenia in 1598 by her father, Philip II., on her marriage with Archduke Albert of Austria, at whose death in 1621 it returned to Spain. In later 17th cent. some provinces were lost to France, but by Treaty of Rastatt in 1714 they passed to Austria. Under the Archduchess Marie Elizabeth (1725–41), Charles of Lorraine (1741–80), and Archduchess Marie Christina (1781–92) country enjoyed considerable prosperity; though in 1789 there was revolt, which was suppressed. During Fr. revolutionary wars Austria suffered many defeats, and in 1814 Belgium was ceded to France. On fall of Napoleon it was, by Treaty of London and Congress of Vienna, united with Holland as kingdom of Netherlands under William of Orange. Result was not satisfactory, and in 1830 an insurrection broke out at Brussels and spread over whole of Belgium, resulting in revolution and separation of Belgium from Holland once again. Ultimately Leopold

of Saxe-Coburg-Gotha was chosen as King of Belgium, and assumed crown in 1831. For some time after this Holland refused to recognize Belgium as separate kingdom, and sent an army to occupy Antwerp; but, owing to Fr. intervention, it had to withdraw in 1832. Leopold I. died in 1865, and was succeeded by his son, Leopold II., who founded the Congo Independent State (1885). The annexation of the state to Belgium was provided for by treaty in 1907 (see CONGO, BELGIAN). Leopold died in 1909, and was succeeded by his nephew, the present king, Albert I. The neutrality of Belgium was placed under the guarantee of Austria, Russia, Britain, and Prussia by the Treaty of London (1839). For the tragedy of Belgium during 1914 and subsequently, see below.

Belgium is limited monarchy; Parliament consists of senate of 120 members and House of Representatives of 186 members.

*Resources and Productions.*—Belgium has over 5,400 m. of railways, chiefly under state control. Principal railway centres are Malines, Brussels. Scheldt and Maas are navigable; many canals. Forests cover about one-sixth of surface, and about two-thirds are cultivated; chief crops, wheat, rye, oats, barley, potatoes, beet, hemp, flax, tobacco, hops, chicory, madder. Horses are bred; honey is produced, silkworms reared. Minerals include coal, iron, lead, zinc, copper, manganese, calamine, E. and S.E. districts being rich in ores. The coalfield, practically conterminous with industrial re-

gion, crosses country from Fr. frontier near Condé to further extremity at Herve, near Aila-Chapelle. Deposits also exist in Campine. Belgium is pre-eminently a manufacturing country, and has many important industrial towns, while Antwerp is one of the greatest shipping and manufacturing centres in N. Europe. The country's commercial prosperity is largely due to Leopold I. and Leopold II., the former having had a great struggle with commercial conservatism of country. Metal manufactures are valuable and numerous, including machinery, firearms, cannon, wire, gold, silver, tin, brass, and copper goods. Other industries are linens, lace, woollens, carpets, cottons, silk, velvet, hosiery, glass, paper, leather, gloves, sugar, brewing, distilling, fisheries. Chief manufacturing towns besides Antwerp are Liège, Brussels, Ghent. Exports include sugar, glass, cottons, linens, woollens, fruit, flour, oils, coal, coke, grain, chemicals, iron, steel, machinery, diamonds, caoutchouc; imports, raw materials for textile trade, hides, rubber, dyes, wine, soap, hops, meat, grain, wheat, coffee.

*Population.*—The Belgian population consists of two distinct types, differing from each other both in physical and moral characteristics and in geographical situation. In agricultural N. are the Flemish; in industrial S. are Walloons. Belgium is one of most densely populated countries of the world (652.9 per sq. m.); hence importance of BELGIAN CONGO. Chief religion is Roman Catholicism; there are a few

Protestants and Jews. Women received the parliamentary vote in Mar. 1920. Primary education is free; Brussels and Louvain have free universities, Ghent and Liège state universities. French and Flemish are equally spoken. Pop. 7,500,000 (2,833,000 French-speaking; 3,220,000 Flemish-speaking; and 871,000 speaking both languages).

Boulger, *History of Belgium* (1900); Charriant, *La Belgique Moderne* (1910); Clive Holland, *Belgians at Home* (1911).

*German Invasion of Belgium.*—At the outbreak of the Great War Germany violated the neutrality of Belgium, which was guaranteed by the treaties of 1839, after making a vain demand that no obstacle be offered to the passage of her troops through that country. On the morning of Aug. 4, 1914, the first Ger. troops crossed the Belgian frontier; the same evening the Belgian Government appealed for aid to Britain, France, and Russia. It was this wrong committed against Belgium, which the Ger. chancellor sought to excuse on the score of 'necessity,' that decided the Brit. Government to declare war on Germany.

On Aug. 5 the Germans began the attack on the fortress of Liège, and on the following day the 3rd Division of the Belgian army, after fighting for forty-eight hours against an enemy four times its superior in numbers, was obliged to retire in order to escape being surrounded. General Leman, governor of the town, took up his quarters in Fort Loncin, and speedily organized a defence. By Aug. 10 the

Germans had moved their siege guns into position. The forts held out till the 16th and 17th. General Leman was taken prisoner, being removed in an unconscious condition from the ruins of Fort Loncin. The defence had arrested the first push of the enemy for several days, and cost him about 48,000 men. A second appeal to the Belgian Government to cease resistance was refused.

From Aug. 6 to 20 the Belgian army was concentrated on the Geete, covering Brussels and Antwerp. It fought many gallant delaying actions, notably at Haelen, but by Aug. 18 hope of a junction with the Franco-Brit. armies on the line Geete-Namur-Meuse was lost, and the bulk of the army withdrew to the entrenched camp of Antwerp (Aug. 20). On Aug. 21 the Germans began the attack on Namur; two days later the forts had been put out of action; the Belgian 4th Division was in retreat, threatened in flank and rear, and only half of it managed to reach France, when it was taken to Antwerp. The function of the Belgian forces was now to threaten the Ger. communications through their country, and from Aug. 25 onwards they engaged in a series of offensive sorties, particularly during the battle of the Marne (Sept. 9-13). Finally, at end of month, the Germans decided that the menace must be removed, and the siege of Antwerp began. It lasted till Oct. 10, being prolonged by the assistance rendered by the Brit. Naval Division, but at the expense of considerable losses in the retreat

across the Scheldt to Ostend. On Oct. 15 the Belgian army, now reduced from 120,000 to 80,000, took up a front along the Yser on the extreme left of the Allied line. From Oct. 18 to 30 it fought a desperate action to prevent the Germans from gaining the passage of the Yser and so turning the Allied flank, finally prevailing by inundating the country. This long and heroic resistance cost 14,000 casualties, but it gave time to the Allies to constitute a front against which all the assaults of the enemy were destined to be broken.

The Belgian troops continued to hold that little corner of their native soil till, in the autumn of 1918, the hour of deliverance came. On Sept. 28 they joined in the general Allied offensive; on Oct. 17 occupied Ostend; on Oct. 19 Bruges; and by Oct. 20 the whole of the Belgian coast was free of Germans. The armistice of Nov. 11 saw the end of Ger. domination, and on Nov. 25 King Albert re-entered his capital in triumph.

The invasion and occupation of Belgium was accompanied by numerous atrocities and illegalities. The crimes of Termonde, Aerschot, Dinant, Louvain have besmirched the Ger. name for all time. More than 5,000 civilians, among them priests, women, and infants, were killed; besides provisions and manufactures, industrial equipment of all kinds was seized; illegal war contributions were exacted; a policy of dividing the Flemings and the Walloons was carried out; and, as a final outrage, the male

population, by an order issued on Oct. 3, 1916, was deported *en masse* and subjected to industrial servitude in Germany or compelled to do military work behind the front, exposed to the fire of the Allied artillery. But the fortitude of the Belgian nation remained unshaken through all their misfortunes. The names of General Leman; M. Max, burgomaster of Brussels; Cardinal Mercier, Archbishop of Malines; Théodor, president of the advocates of Brussels; and, above all, King Albert I., live as noble embodiments of the finest qualities of the Belgian people.

**Belgrade**, cap. of Serbia (44° 49' N., 20° 29' E.), at confluence of Danube and Save; has cathedral, royal palace (scene of murder of King Alexander and Queen Draga, 1903), house of Parliament (unfinished), univ., national museum and library; tobacco, woollen, chocolate factories, etc. It belonged at various times to Roman and Byzantine empires; was seized by Turks (1521), by Austrians (1718), and finally transferred to Serbians (1867). During the Great War suffered much damage by bombardment. When the Austrians launched offensive in Nov. 1914, Belgrade was evacuated by the Serbs, but was held by Austrians only for thirteen days. Brit. naval mission with armed launches on the Danube kept Austrian monitors in check. In autumn of 1915 Austrians renewed offensive, and on Oct. 7 Germans crossed river, and after fierce fighting drove out the Serbs (Oct. 9). The city remained in enemy's possession until Nov. 1, 1918,

when the Serbian flag again flew over Belgrade.

**Belgrano**, MANUEL (1770–1821), Argentine patriot and statesman, played a leading part in Argentina's struggle for freedom from Span. rule; became one of directors of new republic of Argentina; of broad and enlightened views; gave great encouragement to all branches of science and learning.

**Belgravia**, fashionable quarter in s.w. of London, built between 1826 and 1852; mostly owned by the Duke of Westminster.

**Belial**, Heb. word meaning a worthless person. It sometimes refers to the underworld, and to Satan (2 Cor. 6: 15).

**Beliapatam**, or VALARPATTARAM, tn., Malabar dist., Madras Presidency, India (11° 56' N., 75° 20' E.), on l. bk. of Beliapattam R., 4 m. from Cannanore (Kannur); timber.

**Belisarius** (c. 505–65), greatest general of Byzantine Empire; put down Nika revolt at Constantinople (532); won famous victories against Vandals and Ostrogoths of Africa and Italy; accused of conspiring against the emperor; died in disgrace. His career has points of resemblance with that of Marlborough.

**Belize**, or BALIZE, tn. and port, Brit. Honduras (17° 32' N., 88° 9' W.); exports mahogany, dyewoods, bananas, sugar, rum, coco-nuts; wireless station installed (1914); greatest fire in history of the colony (Aug. 1918). Pop. 10,500.

**Bell**, a hollow metal vessel, usually cast in form of inverted bowl with protruding rims, which vibrates when struck by a ham-

mer or clapper—the former from without, the latter from within. The art of bell-founding has remained practically unchanged since mediæval times. Bells are cast by forming a bell-shaped model, covering this with a larger mould, and through an opening in the top of the latter pouring in molten metal until the space between the two is filled. They are usually composed of copper and tin (4 to 1), and the thinner the bell is in proportion to its size the lower is its tone, and *vice versa*.

Small bells have apparently been in use from the earliest historical times, as they have been discovered in ancient Egyptian tombs and in the ruins of Nineveh; the bathing hour was announced in imperial Rome by the ringing of a bell. In the Brit. Isles bells were in use as early as the 6th cent., the most primitive type consisting of quadrangular plates of hammered iron, riveted together. The Saxons became industrious bell-makers, so much so that England became known as the 'ringing island.' The use of bells in religious buildings is believed to have created the need for steeples, or bell-towers, and so led to the development of one of the most distinctive features in eccles. architecture. As regards the various uses of bells, it may be noted that the great bell of a cathedral in mediæval times usually belonged to the burghers, and not to the eccles. authorities.

It used to be the custom to ring the *Passing bell* for the dying, but, by later usage, a muffled bell is rung immediately before



funerals. The use of the *Curfew bell* is well known; and the *Sanctus bell* was formerly hung in a turret outside the church, so that all who heard might prostrate themselves. In excommunication by bell, book, and candle, the bell was rung to summon the congregation to the ceremony.

Bells are sounded either by being swung or chimed. A peal of bells is a suite of bells tuned in certain relations to each other; peals of swung bells never number more than twelve, but chimed bells or carillon peals may comprise forty or more. Large peals of swung bells are most common in England—e.g., St. Paul's and Westminster Abbey, the peal of the latter of which was completed in 1919 and was rung for the first time on Peace Day (July 19, 1919). Bells may be chimed in various ways, but generally the bells are struck, usually on the outside, with a hammer or wooden mallet. In some cases the hammers are regulated by clockwork, but for large carillon peals, played by hand, a species of keyboard mechanism is employed. The art of carillon playing has recently been much neglected, but in 18th cent. carilloneurs could perform intricate fugal works in two or even three parts. The carillon in Malines Cathedral still performs operatic selections.

The largest bell known is the great bell of Moscow, cast in 1733 and weighing 198 tons, but never hung, having been cracked in the making. Another Moscow bell weighs 128 tons. There are also enormous bells to be seen in Burma, Peking, Co-

logne, Vienna, and Paris. In England the largest bell is St. Paul's (16 tons).

For bells used on board ship to indicate time, see BELLS.

North, *English Bells and Bell Lore* (1888), Raven, *Bells of England* (1906).

**Bell, ACTON, CURRER, AND ELLIS.** See BRONTE.

**Bell, ALEXANDER GRAHAM** (1847- ), son of A. M. BELL; invented the telephone, which he introduced (1876) at Philadelphia; inventor of the photophone (1880) and the gramophone (1887). He has conducted aeroplane tests in Nova Scotia.

**Bell, ALEXANDER MELVILLE** (1819-1905), Scot.-Amer. educationist, founder of the 'visible method' of orthoëpy for the education of deaf mutes; wrote *Fundamentals of Elocution*.

**Bell, ANDREW** (1753-1832), clergyman and educationist; introduced the 'Bell' system in 1789 into the Madras Orphan Asylum, by which children may teach others less instructed; founded Bell lectureship at Edinburgh Univ.; buried in Westminster Abbey.

**Bell, SIR CHARLES** (1774-1842), discoverer of the distinct function of the nerves; prof. of anat., Royal Coll. of Surgeons; enjoyed European reputation as surgeon and anatomist. He wrote *Anatomy of Expression in Painting*.

**Bell, GEORGE JOSEPH** (1770-1843), Scot. lawyer, whose *Commentaries on the Laws of Scotland* is regarded as a standard authority by the Scot. bench.

**Bell, HENRY** (1767-1830), constructor of the first sea-going steamship. Bell's *Comet*, a 30-ton

vessel, driven by a 3 h.p. engine, plied in the Clyde in 1812. The *Comet* centenary was celebrated at Port Glasgow in 1912.

**Bell, HENRY GLASSFORD** (1803-74), Scot. lawyer, 'the last of the literary sheriffs'; ed. *Edinburgh Literary Journal* (1828). His writings include the poems 'Mary, Queen of Scots,' 'The Living Mummy,' etc.

**Bell, SIR ISAAC LOWTHIAN** (1816-1904), Eng. metallurgist and iron manufacturer; was highest authority of his time on chemical metallurgy, the blast furnace, and the general science of iron and steel manufacture; M.P. for the Hartlepoons; created baronet (1885). His son **HUGH** (1844-) is a strong advocate of Free Trade, and an authority on economic questions.

**Bell, JOHN** (1691-1780), Scot. traveller, physician to Russian embassy to Persia (1715-18), and to China; settled in Constantinople (1737-46); wrote *Travels from St. Petersburg to Various Parts of Asia*.

**Bell, JOHN** (1745-1831), publisher, and the pioneer of popular publications; established *Bell's Weekly Messenger* and *La Belle Assemblée*; first to discard long s (*f*) in printing.

**Bell, JOHN** (1763-1820), Scot. surgeon and anatomist; wrote *Anatomy of the Human Body* (assisted by his brother Charles), and *Principles of Surgery*.

**Bell, JOHN** (1811-95), Eng. sculptor, whose works include the *Wellington Monument* at the Guildhall, London, and *Guards' Memorial*, Waterloo Place; played a large part in promoting the Great Exhibition of 1851.

**Bell, JOHN JOY** (1871- ), Scot. humorous writer, author of *Wee Macgregor* (1902), *O Christina! Clyde Songs*, etc.

**Bell, JOSEPH** (1837-1911), a famous Edinburgh surgeon, whose power of accurate deduction from slight data is said to have suggested Sir A. Conan Doyle's famous detective character of 'Sherlock Holmes.'

**Bell, ROBERT** (1800-67), Irish author; pub. annotated ed. of the Eng. poets, with memoirs (24 vols. 1854-7); completed Southey's *Lives of the British Admirals*, and was associated with various other works.

**Bell, THOMAS** (1792-1880), zoologist and dental surgeon, whose ed. of White's *Natural History of Selborne* (1877) is a classic; F.R.S. (1828).

**Belladonna**, or DEADLY NIGHT-SHADE, plant, *Atropa belladonna*, of natural order Solanaceæ, the leaves and roots of which are used as a drug in med. because of the alkaloids contained, atropine being the most important. Fruit is like a black cherry in colour and size, but is two-chambered, containing a large number of seeds. Seeds have pitted and netted surface. Belladonna is used externally for relieving pain—e.g., in neuralgia or osteo-arthritis, or for preventing the secretion of milk in the breasts of women unable to nurse their children, or, usually, as a solution of atropine sulphate, for dilating the pupil in ophthalmic practice. Internally it is used in asthma, whooping-cough, etc., for relieving the spasm and decreasing the excessive secretion; it is also used for relieving nocturnal in-

continence of urine. In cases of belladonna poisoning stimulants—e.g., strychnine, etc., hot strong coffee, or caffeine in large doses—should be given, and artificial respiration should be resorted to, as the poisoning depends on the effect of belladonna in stopping the action of the heart and lungs.

**Belladonna Lily** (*Amaryllis belladonna*), a large bulbed flowering plant introduced to Britain (1712) from S. Africa; its fine blossoms not produced until foliage has faded.

**Bellagio**, tn., Como, Italy (45° 58' N., 9° 16' E.); summer resort. Pop. 1,100.

**Bellahouston**, s.w. suburb of Glasgow, in par. of Govan, Lanarkshire, Scotland (55° 51' N., 4° 16' W.).

**Bellaire**, city, Ohio, U.S. (40° 2' N., 80° 47' W.); iron, steel, limestone, farming implements, glass. Pop. 13,000.

**Bellamy**, EDWARD (1850–98), Amer. author, whose socialistic romance *Looking Backward, 2000–1881* (pub. 1888), caused the formation of many 'Nationalist' clubs in America. A sequel, *Equality* (1897), was by no means so successful.

**Bellamy**, GEORGE ANNE (?1727–88), Eng. actress, the natural daughter of Lord Tyrawley and a Quakeress named Seal; played 'Juliet' with Garrick in 1750: had varied career, and wrote *Apology* (6 vols. 1785) for her life.

**Bellanger**, JUSTIN (1833– ), Fr. writer, whose works include *Entre deux Spectacles*, *Damnation*, *Fleur de Noël*, *George Sand*, etc.

**Bellarmino**, ROBERT (1542–1621), Ital. cardinal, avoided

election to the papal throne. His *Disputationes de Controversiis Christianæ Fidei* is famous among Roman Catholics.

**Bellary**, or BALARI. (1) Dist., Madras, India, between E. and W. Ghats; produces cereals, pulse, cotton, and oilseeds. Area, 5,710 sq. m.; pop. 950,000. (2) Tn., cap. of above (15° 8' N., 76° 50' E.); cantonment; fort on rock (450 ft.), town lies below; cotton. Pop. 58,000.

**Bellasis**. (1) EDWARD (1800–73), Eng. barrister; achieved great success at his profession and became a serjeant-at-law (1844). (2) EDWARD (1852– ), son of above; Lancaster herald (1882); registrar of College of Arms (1894); author of *Laus of Arms, chiefly in Connection with Changes of Name, Memorials* of his father, and other works.

**Bellatrix**, star of 1.7 photometric magnitude, at the top right-hand corner of irregular quadrilateral formed by four bright stars of Orion; typical 'helium' star.

**Bellay**, JOACHIM DU (1524–60), Fr. poet, one of the famous group of poets known as the Pléiade, wrote the famous prose work *Deffense et Illustration de la Langue françoise* (1549). The best of his poetical works are *Recueil de Poésie* and *L'Olive*.

**Bell-bird**, popular name of various kinds of birds which have bell-like note, such as Australian *Manorhina*, New Zealand honey-sucker (*Anthornis*), S. Amer. chatterer (*Chasmorhynchus*).

**Belle Alliance**, LA, farm on the field of WATERLOO.

**Belle de Nuit**, Fr. name for *Mirabilis jalapa*, the 'Marvel of

Peru'; has large, smooth leaves; its clusters of flowers expand at night and wither in the morning.

**Belleek**, par. and vil., Ulster, Ireland (54° 29' N., 8° 6' W.); fine porcelain. Also name of a vil. in Armagh, an abbey in Mayo, and a castle in Galway.

**Belle-Ile-en-Mer**, isl., Atlantic Ocean, off France (47° 20' N., 3° 11' W.); pilchard fisheries. Brit. fleet under Hawke defeated French off coast in 1759. Pop. 9,300.

**Belle Isle**. (1) Rocky isl., off Newfoundland (51° 56' N., 55° 21' W.); two lighthouses, wireless communication; original home of Newfoundland dog. (2) Isl., Conception Bay, Newfoundland (47° 39' N., 52° 55' W.); fertile, fine scenery, lofty cliffs. (3) STRAIT, between Labrador and Newfoundland (51° 38' N., 55° 43' W.); navigation dangerous owing to floating ice and fogs; Cartier, the 'Columbus of Canada,' sailed through strait (1534).

**Belle-Isle**. (1) CHARLES LOUIS AUGUSTE FOUQUET, DUC DE (1684-1761), Fr. soldier and statesman; distinguished in wars of Span. and Austrian successions; made marshal of France (1741), duke and peer (1748), and minister of war (1757); established Order of Merit (1759). (2) LOUIS CHARLES ARMAND FOUQUET (1693-1746), Chevalier de Belle-Isle, brother of above, also a soldier of distinction.

**Bellenden**, JOHN (*fl.* 1533), Scot. poet and translator in service of James V.; his *History and Chronicles of Scotland* (1536), trans. from Boece's *Historia Scotorum*, is a fine example of Early Scot. prose.

**Bellenden**, WILLIAM (*b.* 1555), Scot. class. scholar, noted authority on life and writings of Cicero: Middleton's *Life of Cicero* (new ed. 1823) was compiled from Bellenden's works.

**Bellerophon** (class. myth.), son of Glaucus, King of Corinth, and grandson of Sisyphus; famous for slaying monster Chimæra, which he attacked upon his winged horse PEGASUS.

**Belleville**. (1) City, Illinois, U.S. (88° 31' N., 90° W.); brewing, ironfounding; manufactures shoes, flour, glass. Pop. 21,100. (2) City and port, Ontario, Canada (44° 11' N., 77° 27' W.); mills, foundries, kilns. Pop. 9,900. (3) Tn., New Jersey, U.S. (40° 45' N., 74° 11' W.); brass foundries, chemicals, rubber goods, wire cloth, etc. Pop. 9,900.

**Belleville Boiler**. See under BOILER.

**Bellew**, HAROLD KYRLE (1857-1911), Eng. actor and playwright, associated with Mrs. Brown Potter; wrote *Hero and Leander*, *Yvonne and Iolande*, etc.

**Bellewaarde Lake**, stretch of ornamental water lying on small ridge, 2½ m. E. of Ypres, Belgium (50° 52' N., 2° 55' E.), N. of Hooze, on the Menin road: was the scene of stiff fighting during the battles of Ypres, and changed hands several times, being abandoned during Ger. offensive of April 1918, and finally recovered by the Brit., Sept. 28, 1918.

**Bell-flower**. See CAMPANULA.

**Belli**, GIUSEPPE GIOACHINO (1791-1863), Ital. poet; chiefly remembered as author of numerous masterly sonnets, depicting in vivid and colloquial language scenes of daily life in Rome.

**Belligerency**, state of carrying on WAR under conditions laid down by INTERNATIONAL LAW.

**Bellingham**, city, Washington, U.S. (48° 45' N., 122° 28' W.); fine landlocked harbour; sawmills, salmon canneries. Pop. 24,300.

**Bellini**, name of a family of celebrated Venetian painters. (1) JACOPO (1400–66), father-in-law of Mantegna; one of his sketch-books is in Brit. Museum. (2) GENTILE (1426–1507), son of Jacopo; his masterpiece, *The Preaching of St. Mark*, is at Milan. (3) GIOVANNI (1428–1516), brother of Gentile, founder of Venetian school; master of Titian, Giorgione, and Tintoretto; finest works, *Christ at Emmaus* (Venice), *The Transfiguration* (Naples), and *Coronation of the Virgin* (Pesaro).

**Bellini**, VINCENZO (1801–35), Sicilian operatic composer, of European fame. His best known operas are *La Sonnambula* (in which both Patti and Albani made their début in England), *Norma*, and *I Puritani*; popular in early Victorian years, but now seldom performed.

**Bellinzona**, cap. Swiss canton of Ticino (46° 12' N., 9° 2' E.), stands at union of four roads. Important transit trade with Italy; manufactures *acqua di cedro*. Pop. 10,400.

**Bellite**, explosive used in mining, a mixture of ammonium nitrate and dinitrobenzene, the latter in proportion of 16 per cent., or 7 per cent., according to purpose in view.

**Bellman**, KARL MIKAEL (1740–95), poet and improvisator of Stockholm—the Swed. Burns; pub. *Fredmans Epistlar* (1790), and *Fredmans Sönger* (1791).

**Bello**, ANDRÉS (1781–1865), Venezuelan poet and scholar, founded univ. in Santiago (1843), and was its first rector.

**Belloc**, HILAIRE (1870– ), of Fr. descent, Eng. author of poems, satirical novels, books of travel, etc.; keen student of military matters, he prophesied that the Germans would invade France by way of Belgium; most popular work, *The Path to Rome*.

**Bello Horizonte**, cap. Minas Geraes, Brazil (19° 51' S., 44° 28' W.); modern city; gold mines in neighbourhood. Pop. 25,000.

**Bellona** (class. myth.), goddess of war; war personified.

**Bellet**, JOSEPH RENÉ (1826–53), Fr. Arctic explorer; joined Franklin search expedition (1851); discovered 'Bellet Strait' (72° N., 94° 40' W.) in Brit. N. America; lost in *Phoenix* expedition.

**Bellows**. See BLOWING MACHINES.

**Bellows-fish**, Cornish name given to Tetrodontidae, family of sub-order Gymnodontes; has peculiar and often considerable inflation of abdomen.

**Belloy**, PIERRE LAURENT BUIRETTE DE (1727–75), Fr. historical dramatist; chief works, *Zelmire* (1760), *Le Siège de Calais* (1765), *Gaston et Bayard* (1771).

**Bell Pepper**, fruit of *Capsicum grossum* (Guinea pepper).

**Bell Rock**, reef off Forfarshire coast, Scotland (56° 26' N., 2° 23' W.); entirely submerged to depth of 12–16 ft. at high tide; 2 ac. exposed at ebb; lighthouse built by Robert Stevenson (1807–11). It is the scene of Southey's ballad 'The Inchcape Bell.'

**Bells**, nautical term for method of indicating the hours of the

day on board ship. The 24 hours are divided into periods of 4 hours; each half-hour of these is marked by one bell. Thus, beginning at 12 o'clock, half-past 12 is 'one bell'; 1 o'clock 'two bells'; and so on up to 4 o'clock, 'eight bells,' when the round begins again.

**Bellshill**, tn., Lanarkshire, Scotland (55° 49' N., 4° 3' W.); centre of coal mining, steel and iron working; has an academy. Pop. (including Mossend) 16,700.

**Bell-the-Cat**. See DOUGLAS, ARCHIBALD.

**Belluno**, tn. and episc. see, prov. of same name, N. Italy (46° 8' N., 12° 13' E.); Renaissance cathedral; silk mills; occupied by Austria (Dec. 1917–Nov. 1918). Pop. 20,500.

**Belmez**, tn., Cordova, Spain (38° 16' N., 5° 16' W.); coalfield; Moorish castle. Pop. 10,000.

**Belmont**, tn., Cape Prov., S. Africa (29° 26' S., 24° 21' E.); here Lord Methuen drove Boers from their entrenchments (1899).

**Beloit**. (1) City, Wisconsin, U.S. (42° 32' N., 89° 3' W.); college; manufactures agricultural machines, paper, shoes. Pop. 15,100. (2) City, Kansas, U.S. (39° 31' N., 98° 9' W.); flour milling; agricultural produce; live stock; limestone quarries. Pop. 3,000.

**Belomancy**, anc. form of divination by shuffling marked arrows before the image of the god and taking guidance from the one selected (Ezek. 21: 21).

**Belopolsky**, ARISTARCH (1854–), Russian astronomer; an adept in spectroscopic astron.

**Belovar**, former co., Hungary, now Jugo-Slavia (45° 50' N., 16° 52' E.); mountainous; fruit-

ful soil. Area, 1,442 sq. m.; pop. 301,000.

**Below**, FRITZ VON (1853–), Ger. soldier; commanded Ger. 1st Army on Somme front (1916); drew up *Manual for the Training of Infantry in War*, which, Ludendorff says, 'showed a thorough grasp of the character of our infantry;' on Arras front, April 1917; failed in great attack on Reims (1918).

**Below**, OTTO VON, Ger. soldier, the brother of Fritz von Below, led his troops so brilliantly at the battle of Tannenberg, E. Prussia (1914), that, although a junior corps commander, he was given command of the 8th Army on the Baltic flank; was sent to Macedonia to take command of new army group operating with the Bulgarians (1916); succeeded Falkenhausein in command of 6th Army at Lens (1917); sent to Italy, and broke the Ital. lines at Caporetto; his successful employment of 'infiltration tactics' marked him out for a command in the great offensive in the West, where he led the 17th Army that failed to take Arras (March 1918).

**Belpasso**, tn., Sicily (37° 35' N., 14° 58' E.), on s. slope of Mt. Etna; old town overwhelmed by eruption (1669). Pop. 10,000.

**Belper**, urban dist. and mrkt. tn., Derbyshire, England (53° 2' N., 1° 29' W.); seat of cotton trade; mills established here (1780) by Jedediah Strutt; engineering and iron works; manufactures hosiery and earthenware. Pop. 11,600.

**Belsham**, WILLIAM (1752–1827), Eng. political writer and

historian; author of *History of Great Britain to the Conclusion of Peace of Amiens*; lucid writer.

**Belshazzar** (6th cent. B.C.), Babylonian general, identified by modern scholars as son of King Nabonidos, not of King Nebuchadnezzar, as stated in Book of Daniel; made last resistance of Babylonia to Cyrus; Bible story of Belshazzar's feast is thought apocryphal.

**Belt, GREAT**, strait between Zealand and Fünen, Denmark (55° N., 11° E.); navigation difficult because of shoals and winter ice. Length, 40 m.

**Belt, LITTLE**, strait between Jutland and Fünen, Denmark (55° N., 10° E.). Length, 30 m.; breadth, 1–12 m.

**Belt and Rope Gearing.** When shafts are too far apart to be connected by toothed wheels, a continuous rotary motion may be transmitted by endless bands, belts, or ropes and pulleys. The friction between bands and pulleys is able to overcome resistance of pulleys. Because of tendency to slip, a belt should not be used when ratio of revolutions of shafts has to remain fixed. Belts are made of leather (oak-tanned or raw-hide); cotton; waterproof canvas; india-rubber and canvas; gutta-percha, canvas, and balata; llama hair, etc.

**Rope-Driving** is now being widely used. The ropes are made of hemp, manila, or cotton. Pulleys used for this gearing have V-shaped grooves on peripheries; angle of groove 45°, and so made that rope cannot reach bottom of groove. Resistance to slipping is increased

by wedging action of groove. Rope-driving pulley should not have diameter less than thirty times diameter of rope, as internal stresses, by bending quickly round small pulley, soon break the rope. Steel or iron wire ropes are sometimes used for long distance transmission. Pulley grooves are wider, and bottom of groove is lined with gutta-percha, wood, or leather to prevent slipping.

**Beltane**, Celtic festival associated with May Day, supposed to be derived from the Druidical worship of the sun-god. Mention is made of it as early as the beginning of 10th cent. by Cormac, Archbishop of Cashel. It was the custom to light 'beltane fires,' at which 'beltane cakes' were baked, and certain usages were observed in the distribution of these cakes amongst the company. Rites still linger in certain parts of Brit. Isles.

**Beltrami**, EUGENIO (1835–1900), Ital. geometrician, wrote *Saggio di Interpretazione della Geometria non-Euclidia*, in the *Giornale di Matematico*, VI.

**Beltrami**, GIACOMO COSTANTINO (1779–1855), Ital. traveller; discovered source of riv. Mississippi (1823); also explored in Mexico; wrote *Le Mézique*, etc.

**Beltran**, FRIAR LUIS (c. 1780–1827), Argentine patriot, left the cloister for the army and was a successful artillery commander in War of Liberation, after which he returned to his monastery.

**Beluchistan**, alternative spelling of BALUCHISTAN.

**Beluga** (WHITE WHALE: *Delphinapterus leucas*), Arctic Del-

phinoid cetacean closely allied to narwhal, but tuskless.

**Belus**, son of Poseidon and Libya, and father of Ægyptus and Danaus; divinity of several Eastern nations, and supposed founder of Babylon.

**Belvedere**. (1) Common name for *Kochia scoparia* (Chenopodiaceæ), found in temperate regions of Old World; known as mock or summer cypress. (2) Ital. building with fine view; that of the Vatican gave its name to the Apollo Belvedere.

**Belvisia**, genus of tropical African plants; formerly classed as Belvisiaceæ, now known as *Napoleona*; related to pomegranates and myrtles. Name also applied to group of ferns.

**Belzoni**, GIOVANNI BAPTISTA (1778-1823), Ital. Egyptologist, the pioneer in Egyptian archaeological discovery, explored tomb of Seti I. and inner rooms of the Second Pyramid at Gizeh.

**Bem**, JOSEF (1795-1850), Polish soldier, fought in Polish war of independence (1830); became Turk. governor of Aleppo. His exploits were immortalized by the poet Sandor Petöfi.

**Bemba**, LAKE. See under BANGWEULO.

**Bemberg**, HERMANN (1861- ), Fr. musical composer, best known for his grand opera *Elaine* and his *Ballade du Désespéré*.

**Bembex**, genus of hymenopterous insects, chiefly found in warm countries; noticeable for burrowing propensities; are generally known as 'sand-wasps.'

**Bembo**, PIETRO, CARDINAL (1470-1547), Ital. poet, reputed as the principal man of letters of his day; wrote *Historia Veneta*.

**Bembridge Beds**, Oligocene fluvio-marine deposits with Osborne beds below and Hampstead beds above; well exposed near Bembridge, Isle of Wight.

**Bemis**, EDWARD WEBSTER (1860- ), Amer. economist; wrote *Municipal Monopolies*; has held professorial appointments.

**Ben**. (1) Inner room of two-roomed cottage in Scotland; the outer is known as the *but*, hence 'but and ben.' (2) Gael. for 'mountain'—e.g., Ben Nevis. (3) Heb. and Arabic for 'son of'—e.g., Rabbi ben Ezra, Benjamin.

**Benares**. (1) City, United Provinces, India (25° 18' N., 83° 1' E.), on Ganges; labyrinth of narrow streets; many temples, mosques, shrines, palaces; notable buildings are mosque of Aurungzebe and Golden Temple and old observatory. From remotest ages Benares has been Hindu holy city, and centre of Brahminical learning; annually visited by innumerable pilgrims who come to bathe in sacred river; remarkable river front; burning ghats where cremation is practised; commercial centre, with manufactures of brocade, gold filigree, silver, and brass work; is large market for Manchester goods. Pop. 203,800. (2) Native state; cr. 1911; area, 887 sq. m.; pop. 362,000.

**Benbecula**, isl., Outer Hebrides, Scotland (57° 26' N., 7° 18' W.); fishing. Pop. 1,300.

**Benbow**, JOHN (1653-1702), Eng. admiral, sent with squadron to W. Indies to settle disputes with Spaniards over the Darien settlement; fought with French squadron, in 1702, off St. Domingo.



**Bench**, word used to signify legal or political body, as King's Bench (or Queen's Bench when queen is reigning), Treasury bench, etc.; 'front bench,' that occupied by the leaders on either side in Houses of Parliament; 'board' has received similar transference of meaning.

**Bench.** See INNS OF COURT.

**Benkendorff**, COUNT ALEXANDRE (1849-1917), Russian diplomatist; successively held posts at Rome, Vienna, and Copenhagen; was appointed ambassador to Great Britain (1903), and held that post till his death. He handled with skill the Dogger Bank incident, and had a large share in realizing the Triple Entente. During the Great War he did much to encourage study of Russian in Great Britain, and laboured for the development of Brit. and Russian trade relations; died in London.

**Bencoolen.** See BENKULEN.

**Ben Cruachan**, mt., 3,690 ft., Argyllshire, Scotland (56° 26' N., 5° 8' W.); huge granite mass.

**Benczur**, JULIUS (1844- ), Hungarian painter, famous as a portrait painter, more particularly of historical subjects; painted *The Departure of Ladislaus Hunyadi*, *The Baptism of St. Stephen*, *King of Hungary*, etc.

**Bend** (in heraldry), a broad band across the shield from top to bottom, representing the knight's shoulder belt. A *bend sinister* runs from the 'sinister chief' corner to the 'dexter base,' and is often wrongly supposed to symbolize illegitimacy. See BAR and HERALDRY.

**Benda**, GEORG (1722-95), Ger. musician, a pioneer of musical

melodrama; wrote *Ariadne auf Naxos*, *Medea*, etc.

**Benda**, JULIEN, Fr. essayist and novelist, one of the most distinguished of the younger writers, a formidable opponent of Bergson; wrote *Le Bergsonisme*, and a much-discussed novel, *L'Ordination*.

**Bendall**, CECIL (1856-1906), Sanskrit scholar; prof. at Univ. Coll., London (1885-1903); wrote *A Journey of Literary and Archaeological Research in Nepal and Northern India*, etc.

**Bender**, or BENDERY, tn., Bessarabia, Rumania (46° 47' N., 29° 26' E.); Charles XII. remained here for four years after Pultowa (1709-13); timber, cattle, etc.; bricks. Pop. 33,700.

**Bender Abbas.** See BANDER ABBAS.

**Bender Gez**, or BANDER GAZ, Pers. Caspian port (36° 46' N., 53° 50' E.); exports raw cotton.

**Bendigo**, originally SANDHURST, Victoria, Australia (36° 48' S., 144° 18' E.); is a gold-mining centre and manufactures bricks, etc.; coach building, brewing. Pop. 42,000.

**Bendzin**, tn., Poland (50° 19' N., 19° 11' E.); was one of the first towns occupied by Germans (Aug. 1914); iron, coal, and zinc mines. Pop. 42,000.

**Benedek**, LUDWIG AUGUST VON (1804-81), Austrian general, distinguished in Galician, Hungarian, and Italian campaigns, and at Solferino. Hampered by staff intrigues, he was defeated at Sadowa, and was unjustly accused of failure.

**Beneden**, PIERRE JOSEPH VAN (1809-94), Belgian zoologist; prof. in Catholic univ. of Louvain

(1836); wrote *La Vie Animale et ses Mystères*, etc., and devoted a long life to researches in anat., zool., and ichthyology.

**Benedetti**, VINCENT, COUNT (1817–1900), French diplomatist, whose ambassadorship at Berlin in the reign of Napoleon III. was historical, because of his negotiations with the Prussian king at Ems, and the subsequent declaration of war. See under FRANCO-GERMAN WAR.

**Benedicite**, or 'The Song of the Three Holy Children,' from the Apocrypha, where the canticle is quoted as chanted by Shadrach, Meshach, and Abednego. Used in the Book of Common Prayer as alternative to *Te Deum* in morning service. Grace before meat in the R.C. Church is also known as *Benedicite*.

**Benedicks**, CARL AXEL FREDERICK (1875– ), Swed. metallurgist, was first to produce meteoric iron artificially (1910); author of *Researches on Carbon Steel* (1904), *Cooling Power of Liquids* (1908), *Metallography and Colloidal Chemistry* (1911).

**Benedict**, name of fifteen popes and also of one antipope. Of the first nine popes little of importance is known, save that one (B. II., 684) was noted for holiness of life, and is reputed a saint, and one for dissoluteness of life (B. IX., 1033); he was four times expelled from Rome, yet was thrice reinstalled. B. XI. (1303–4), NICHOLAS BOCCASINI, a Dominican; wrote scriptural commentaries; is beatified. B. XII. (1334–42), JACQUES FOURNIER, a Cistercian; an able theologian; wished to restore Papacy to Rome, and tried to

unite the Gr. and Lat. Churches. B. XIV. (1740–58), PROSPERO LAMBERTINI, an able theologian and canonist, left a standard work on canonization. B. XV., the present pope (1914– ), GIACOMO DELLA CHIESA (b. 1854); Archbishop of Bologna (1914); cardinal (May 25, 1914); pope (Sept. 3, 1914); the first years of his pontificate were extraordinarily difficult owing to complications of the Great War.

The antipope PEDRO DI LUNA was known as B. XIII.; elected by cardinals of Avignon (1394); maintained a struggle against each pope in turn from Urban VI. to Martin V.

**Benedict**, ST. (480–543), founder of the order of Benedictines, and author of *Regula Monachorum* (c. 515), which became the standard rule of the Western monastic orders.

**Benedict**, SIR JULIUS (1804–85), musical composer; of Ger. birth, settled in London (1835); associated with grand opera at Drury Lane and other theatres. His own operas include *The Lily of Killarney*, his greatest success; *The Crusaders*, *The Bridges of Venice*, etc.; knighted, 1871.

**Benedict Biscop** (628–690), Eng. churchman; founded a monastery at Jarrow (682); associated with Bede at Jarrow; remarkable for learning and influence on eccles. architecture.

**Benedictine**. See LIQUEURS.

**Benedictines** ('BLACK MONKS'), so called after St. Benedict of Nursia, who established monasteries at Subiaco, Monte Cassino (famous in annals of monasticism), and, before his death, at twelve other places.

When Monte Cassino was taken by Lombards (c. 590) the monks migrated to Rome. To this order belonged St. Augustine, who evangelized England; offshoots were planted in Gaul and Germany; and by the 8th cent. St. Benedict's was the chief monastic rule in Europe. Benedictines, besides Christianizing England and the Slavonic and Scandinavian peoples, did much educational work: they had many schools in the Middle Ages, as they have to-day. In the 9th cent. their great monastery of Cluny (France) became of enormous importance in Europe, and lesser houses were subordinated to it. New orders, among them the Cistercians, adopted the Benedictine rule. The Lateran Council of 1215 decreed that Benedictine houses should be federated in provincial chapters. During the later Middle Ages the Benedictine houses degenerated, particularly the convents for women, but reform came with the Council of Trent and the Counter Reformation. There are now in England several large abbeys, a priory, and a nunnery. In France an important congregation, called the Maurists, was established in 1621, at St. Maur, and other Benedictine monasteries associated with it. They are specially known for their historical work, being initiators of historical research in France. Before their dispersion at the Revolution they had issued several hundred volumes, many of them works of the Fathers, besides Biblical, historical, and monastic collections.

Montalembert, *Monks of the*

*West*; Gasquet, *English Monastic Life*; Echenstein, *Women under Monasticism*.

**Benediction**, term specially applied to blessing pronounced by presiding minister at conclusion of divine service. Most familiar form is that found at end of the communion office of Church of England, or 2 Cor. 13:14 may be used. In R.C. Church the term is applied to a service in which, after the Host has been exposed in a monstrance, the priest, wearing the cope, makes with the Host the sign of the cross over the worshippers.

**Benedictus**, the hymn of Zacharias (Luke 1:68), used from anc. times in the services of Eng. and some Scot. Churches. The term is also applied in R.C. Church to that part of the Mass commencing with '*Benedictus qui venit*,' also to a musical setting of the same.

**Benedikt**, MORITZ (1850-1920), Austrian editor; proprietor of *Neue Freie Presse*, through which organ he strove to make Austria an instrument in the Ger. plan of world domination; he, more than any other man, probably responsible for downfall of Austria. His paper was notoriously anti-British, and pub. scurrilous attacks on King Edward, Sir Edward Grey, Lord Lansdowne, and others.

**Benefice**, in Roman law a term applied to the grant of land to soldiers and others; in feudal times, applied to grants to vassals, on condition of military service. An eccles. benefice is now a living to which a clergyman is presented by a patron, and instituted by the bishop.

**Benefit** OF CLERGY, the privilege of virtual immunity for clerical offenders, at one time a scandal in this country. Those in orders, even in minor orders, were entitled to have their case removed to eccles. courts, and often escaped the full punishment which would be meted out to a layman. Peers were in 1547 included. Crimes of more serious nature were gradually excluded, and by 1841 all privileges of the kind were finally abolished.

**Benefit Societies.** See FRIENDLY SOCIETIES.

**Beneke, FRIEDRICH EDUARD** (1798–1854), Ger. philosopher and psychologist, who held that the best approach to philosophy is through empirical psychology. His most important work is *Lehrbuch der Psychologie als Naturwissenschaft* (1833).

**Benes, EDUARD** (1884– ), Czech politician, lecturer on sociology at Prague at outbreak of Great War; succeeded in escaping from Bohemia, and as a Czech leader pointed out necessity of an independent Czecho-Slovak state; pub. *Bohemia's Case for Independence* (1917), etc.

**Benevento.** (1) Mountainous and agricultural prov., Italy. Area, 820 sq. m.; pop. 253,600. (2) Cap. of above (41° 8' N., 14° 46' E.); Roman triumphal arch (115); cathedral (12th to 13th cent.); Sabine town; occupied by Romans (300 B.C.); nearly destroyed by an earthquake (1668). Pop. 24,300.

**Benevieni, GIROLAMO** (1453–1542), Ital. poet, friend and defender of Savonarola; wrote *canzoni*, odes, and poems on divine love; leading member of

the circle including Pico della Mirandola and Marsilio Ficino.

**Benevolences**, term applied to compulsory gifts of money demanded from their subjects by certain Eng. sovereigns without consent of Parliament; declared illegal by Petition of Right (1628) and Bill of Rights (1689).

**Benfey, THEODOR** (1809–81), Ger. philologist and orientalist of Jewish origin. His works received no recognition until 1863. Greatest work is his *Sanskrit-English Dictionary* (1866).

**B.Eng.,** Bachelor of Engineering.

**Bengal** (23° N., 89° E.), Presidency of 'Fort William in Bengal'; created a governorship (1912); includes deltas of Ganges and Brahmaputra and alluvial plains along their courses; bounded N. by Sikkim, Bhutan, E. by Assam, Upper Burma, W. by Bihar and Orissa, S. by Bay of Bengal. Bengal came into hands of E. India Co. (1765); transferred to Brit. crown (1858); divided into two provinces—(1) Bengal, and (2) Eastern Bengal and Assam (1905); owing to political unrest reconstituted (1912), and divided into Presidency, Burdwan, Darjeeling, Chittagong, Dacca, and Rajshahi divisions. Thanks to heavy rainfall and moist, warm atmosphere, production is enormous; mainly rice, but also pulse, jute, opium, sugar-cane, oilseed, tobacco, ginger, pepper, tea, cinchona, spices, tussore silk, timber, etc.; great mineral wealth—coal, iron, saltpetre; manufactures jute fabrics, gunny bags, cottons, silk, canvas, muslin, and pack-thread; good communications by rail and river.

Cap. Calcutta; the secondary cap. is Dacca.

Administration under a governor assisted by executive council of three members and legislative council of fifty members.

Inhabitants are of many races; majority of Mohammedan religion, Hinduism next in numerical importance. Area, with native states of Cooch Behar and Hill Tippera, 84,092 sq. m.; pop. 46 300,000.

**Bengal, Bay of**, vast triangular inlet, Indian Ocean ( $16^{\circ}$  N.,  $88^{\circ}$  E.); excellent harbours on E.; length, 1,200 m. N. to S.

**Bengal Fire**, a firework-illuminating composition; generally contains potassium chlorate and sulphur, and in addition barium nitrate or strontium nitrate, etc.

**Bengal Gram**, seed of an annual leguminous plant (*Cicer arietinum*); grown in warm countries, in India to extent of 12,000,000 ac.; nutritious seed.

**Bengal Hemp**. See **SUNN HEMP**.

**Bengasi**, or **BENGHAZI**, seapt., Tripoli, N. Africa ( $30^{\circ} 7'$  N.,  $20^{\circ} 3'$  E.), exports cereals, wool, ostrich feathers, sponges. Has old castle, mosque, Franciscan monastery. Was occupied by Italians (1911). Pop. 25,000.

**Benguella**, **SÃO FELIPE DE**, cap. of dist. of same name, Port. W. Africa ( $12^{\circ} 35'$  S.,  $13^{\circ} 23'$  E.); sulphur, rubber, wax; founded in 1617. Pop. 3,000.

**Benguet**, prov., Luzon, Philippines ( $16^{\circ} 30'$  N.,  $120^{\circ} 40'$  E.); mountainous; forests; wheat, rice, coffee, tea; copper, gold, iron, coal, limestone. Area, 900 sq. m.; pop. 22,700.

**Benhadad**, name of three kings

of Damascus—i.e., Syria. (1) B. I. was bribed by Asa of Judah with Temple treasures to assist him against Baasha of Israel (1 Kings 15). (2) B. II., the 'Dad-idri' of Assyrian inscriptions, was utterly defeated by Shalmaneser II. of Assyria (853 B.C.); was murdered by Hazael (2 Kings 8:7, 15). (3) B. III., thrice defeated by Joash, King of Israel (2 Kings 13:25).

**Benham**, **WILLIAM** (1831–1910), Eng. clergyman and author, the 'Peter Lombard' of the *Church Times*; pub. sermons to city men as *Lombard Street in Lent* (1894); *Dictionary of Religion* (1887), *Winchester Cathedral* (1893), etc.

**Beni**. (1) N. dep., Bolivia ( $10^{\circ}$ – $16^{\circ} 30'$  S.,  $60^{\circ} 30'$ – $70^{\circ}$  W.); rubber; pasture for cattle. Pop. c. 40,000. (2) Riv., Bolivia, flows through fertile and mineral-bearing country; joins Mamoré R.

**Beni-Hassan**, vil., r. bk. Nile, Egypt ( $27^{\circ} 58'$  N.,  $30^{\circ} 51'$  E.); in vicinity are rock tombs displaying industrial scenes, dating from 2700 B.C. Pop. 1,300.

**Beni-Israel** ('sons of Israel'), colony of Jews found chiefly in native state of Janjira, Kolaba dist., Bombay Presidency.

**Benin**. (1) Dist., W. Africa, part of S. Nigeria; produces rice; exports large quantities of palm oil, rubber, mahogany. Area (approx.), 3,750 sq. m.; pop. 84,000. (2) Tn., cap. of above ( $6^{\circ} 15'$  N.,  $5^{\circ} 34'$  E.); discovered by Portuguese (15th cent.); for long seat of slave trade. Pop. 10,500. Under Brit. protection since 1897, when British stormed and partly burnt the place to avenge murder of con-

sul-general and eight other Europeans. Now under Brit. resident and council of chiefs. (3) Riv., Benin dist., enters Atlantic ( $5^{\circ} 46' \text{ N.}$ ,  $5^{\circ} 3' \text{ E.}$ ); navigable to Sapele; length, 70 m. (4) BIGHT OF, div. of Gulf of Guinea.

**Beni-Saf**, seapt., Algeria ( $35^{\circ} 21' \text{ N.}$ ,  $1^{\circ} 20' \text{ W.}$ ); large export trade in iron ore. Pop. 9,300.

**Beni-Suef**. (1) Prov., Upper Egypt. Area, 410 sq. m.; pop. 375,000. (2) Tn., cap. of above ( $29^{\circ} 6' \text{ N.}$ ,  $31^{\circ} 9' \text{ E.}$ ); carpets, coarse linen stuffs; quarries of alabaster; formerly famous for linens; remains of Byzantine church. Pop. 29,000.

**Benjamin** ('son of the right hand'), (1) youngest son of the patriarch Jacob; (2) the tribe which traced its descent from Benjamin. Its territory, a rugged region, adjoined Ephraim. King Saul was a Benjamite, so were Jeremiah and St. Paul.

**Benjamin of Tudela** (fl. 12th cent.), Jewish traveller in the East; his account of his journeys in Egypt, Babylonia, Persia, and Chin. Tartary is valuable.

**Benjamin, JUDAH PHILIP** (1811-84), Anglo-Amer. statesman and lawyer; Confederate secretary of state (1862-5); q.c. (1872). His work, generally known as *Benjamin on Sales* (1868), is a classic.

**Benjamin, PARK** (1849- ), Amer. lawyer and author; joint editor of *The Scientific American* (1872-8); author of *The Age of Electricity* (1886).

**Benkovac**, tn., Jugo-Slavia ( $44^{\circ} 3' \text{ N.}$ ,  $15^{\circ} 36' \text{ E.}$ ); ruins of Roman fort. tn. Pop. 17,200.

**Benkulen**, residency and tn., Sumatra, Dutch E. Indies ( $3^{\circ} 50'$

s.,  $102^{\circ} 15' \text{ E.}$ ). Pop. of residency, 200,000; of tn., 7,700.

**Ben Ledi**, mt., 2,875 ft., S. Perthshire, Scotland ( $56^{\circ} 16' \text{ N.}$ ,  $4^{\circ} 19' \text{ W.}$ ); referred to by Scott in *The Lady of the Lake*.

**Ben Lomond**, mt., 3,192 ft., N.W. Stirlingshire, Scotland ( $56^{\circ} 11' \text{ N.}$ ,  $4^{\circ} 37' \text{ W.}$ ); on E. side of Loth Lomond; mica, slate, granite, and quartzite; celebrated in Scot. song and story.

**Ben Macdhui** ('hill of the black sow'), 4,296 ft., W. Aberdeenshire, Scotland ( $57^{\circ} 4' \text{ N.}$ ,  $3^{\circ} 31' \text{ W.}$ ); in 'wildest region of the wildest scenery in Britain.'

**Bennett, ENOCH ARNOLD** (1867- ), Eng. novelist and playwright, most of whose novels describe 'the Five Towns' in the Staffordshire Potteries with consummate realism and artistic restraint. His best known books are *Clayhanger*, *Sacred and Profane Love*, and *The Old Wives' Tale*. Among his plays are *Cupid and Commonsense*, *Milestones* (with Edward Knoblauch), *The Great Adventure* (1913), *Sacred and Profane Love* (1919).

**Bennett, JAMES GORDON** (1841-1918), Amer. journalist, proprietor of the *New York Herald*; he fitted out, in conjunction with the *Daily Telegraph*, Stanley's expedition to find Livingstone (1874), also the *Jeannette* Polar Expedition (1879). Donor of the cup competed for annually by automobilists, and of the 'Bennett Trophy' for the best long-distance flight.

**Bennett, SIR WILLIAM STERNDALE** (1816-75), Eng. musical composer, founded the Bach Soc.; principal of the Royal Academy of Music. His compositions in-

clude the overtures *Parisina* and *The Naiades*, and the cantata *The May Queen*, as well as many songs, odes, and anthems.

**Ben Nevis**, mt., 4,406 ft., Inverness-shire, Scotland ( $56^{\circ} 48' \text{ N.}$ ,  $5^{\circ} \text{ W.}$ ), highest mountain in Brit. Isles; gneiss and granite overlaid by porphyritic greenstone; station of the Scot. Meteorological Soc. up to 1904, when government refused to contribute any longer to its support, and observatory was closed.

**Bennigsen**, LEVIN AUGUST THEOPHIL, COUNT VON (1745-1826), Russian general; was gov.-gen. of Lithuania (1801); commander of an army (1806); checked Napoleon at Eylau (1807); was discredited for several years after defeat at Friedland; afterwards defeated Murat at Tarentino, and became commander-in-chief. His successful leadership culminated in defeat of Napoleon at Leipzig (1813); cr. Count the same day.

**Ben-nut Tree** ('horse-radish tree') bears winged seeds, called 'ben-nuts'; resembles Leguminosæ; native of tropical Asia and N. Africa.

**Benoit**, PETER LÉONARD LÉOPOLD (1834-1901), Belgian composer; brought about the establishment at Antwerp of a Flemish school of music in 1867.

**Benrath**, tn., Rhenish Prussia ( $51^{\circ} 10' \text{ N.}$ ,  $6^{\circ} 50' \text{ E.}$ ); ironworks; royal castle; occupied by British (Nov. 1918-19). Pop. 20,400.

**Bensalem**, an imaginary island where Bacon lays the scene of his Utopia in *The New Atlantis* {written in 1617}.

**Bensberg**, tn., Prussia ( $50^{\circ} 57' \text{ N.}$ ,  $7^{\circ} 10' \text{ E.}$ ); chemical

works; has lead, zinc, and iron mines. Pop. 11,500.

**Benserade**, ISAAC DE (1612-91), Fr. poet, who wrote the mythological ballets in which Louis XIV. and his court frequently took part, the best known being *Cassandra*, *Night*, and *Triumph of Love*.

**Benson**, ARTHUR CHRISTOPHER (1862- ), author, son of Archbishop Benson; Master of Magdalene, Cambridge; best known for his *House of Quiet*, *The Upton Letters*, and *From a College Window*. In collaboration with Lord Esher edited *Selections from the Correspondence of Queen Victoria* (1907). His *Hugh*, *Memoirs of a Brother* (1915), is an account of ROBERT HUGH BENSON.

**Benson**, EDWARD FREDERIC (1867- ), novelist, son of Archbishop Benson; wrote *Dodo*, *The Luck of the Vails*, *The House of Defence*, *The Climber*, *Robert Linnet*, etc., as well as a comedy, *Dinner for Eight*.

**Benson**, EDWARD WHITE (1829-96), Archbishop of Canterbury, formerly head master of Wellington Coll. and Bishop of Truro. His most important works are a *Life of Cyprian* and studies on the *Apocalypse*.

**Benson**, SIR FRANK R. (1858- ), actor-manager, with his wife, Miss Constance Featherstonhaugh, has produced practically all of Shakespeare's plays, and has trained many leading actors and actresses. Knighted 1916. For over a quarter of a cent. has directed the annual festivals at the Shakespeare Memorial Theatre, Stratford-on-Avon.

**Benson**, ROBERT HUGH (1871-1914), author and R.C. priest,

formerly a clergyman in Church of England, son of Archbishop Benson: wrote *The Light Invisible*, and many R.C. historical novels, including *By What Authority?*, *The Queen's Tragedy*, *The Necromancers*, *The Dawn of All*. *Memoir*, by A. C. Benson.

**Benson**, WILLIAM SHEPHERD (1855— ), Amer. admiral, chief of naval operations (1915); a member of the U.S. delegation to the Allies' War Council in 1917.

**Bent**, JAMES THEODORE (1852-97), Eng. author and traveller; with his wife made extensive journeys in Italy, S. Africa, Asia Minor, and Arabia. Wrote *The Ruined Cities of Mashonaland* (3rd ed. 1895).

**Bent Grass** (*Agrostis*), genus of grass, with nearly a hundred species, distinguished by open panicle and small spikelets with only one flower each.

**Bentham**, GEORGE (1800-84), Eng. botanist, nephew of Jeremy Bentham; author of important work on logic, numerous botanical papers, and, in collaboration with Sir Joseph Hooker, of *Genera Plantarum*, a masterpiece of systematic botany.

**Bentham**, JEREMY (1748-1832), Eng. writer on law and political economy; called to bar, but refused to plead; gave himself up to philosophical writing, publishing *Fragment on Government*, or a *Comment on the Commentaries* (1776), against Blackstone's conception of perfection of Eng. constitution; *Principles of Morals and Legislation* came out in 1789, *Defence of Usury* in 1816; established *Westminster Review* (1823). Bentham belonged to rationalist-utilitarian

school of philosophy (himself inventing phrase *utilitarian*), and adopted as motto, 'the greatest happiness of the greatest number.' His *Principles of Penal Law* foreshadowed modern principles of punishment. See Sir Leslie Stephen's *Jeremy Bentham*.

**Benthamia**, genus of Cornaceæ, shrubby relatives of the Umbelliferae; fruits are small drupes, with one or two celled stones, forming strawberry-like aggregates.

**Bentinck**, LORD HENRY CAVENDISH (1863— ), Eng. politician, represented S. Nottingham from 1895 to 1906, and again since 1910. Served in S. African War (1900), and during Great War at Dardanelles (1915); of progressive views and pronounced popular sympathies.

**Bentinck**, WILLIAM, 1ST EARL OF PORTLAND (? 1649-1709), diplomatist and friend of William III.; William's confidential adviser in Eng. affairs, and principal agent in foreign affairs. Took part in the negotiations which led to the Peace of Ryswick (1697), and the two partition treaties (1698-1700).

**Bentinck**, LORD WILLIAM CAVENDISH (1774-1839), second son of 3rd Duke of Portland; introduced reforms into Indian administration, and became first gov.-gen. of India (1833).

**Bentinck**, WILLIAM GEORGE FREDERIC CAVENDISH (1802-48), commonly called Lord George Bentinck, younger son of 4th Duke of Portland; prominent politician; promoted enfranchisement of Irish and Jews, but opposed Free Trade, and was formidable opponent of Peel; cut great figure in sporting world.



**Bentinck**, WILLIAM HENRY CAVENDISH, 3RD DUKE OF PORTLAND (1738–1809), Whig statesman; was lord-lieutenant of Ireland (1782); prime minister of coalition government (April to Dec. 1783); French Revolution forced him to join Pitt; home secretary (1794); president of Council (1802–4) under Addington; member of cabinet on Pitt's return to power; was again prime minister (1808–9); resigned in the latter year.

**Bentley**, RICHARD (1662–1742), Eng. class. scholar and textual critic; *b.* Oulton (Yorks); educated Wakefield and Cambridge; master of Spalding grammar school (1682), but soon resigned to become tutor to the son of Dr. Stillingfleet, Dean of St. Paul's. He remained with this family for six years, and upon the dean being appointed Bishop of Worcester, he accompanied his pupil to Oxford, where he became noted for his learning, and delivered the Boyle lectures on the *Evidences of Natural and Revealed Religion*. Having taken his degree at both universities, he took holy orders, with a view to eccles. preferment. His letter to Dr. Mill, editor of the Gr. chronicler John Malalas, in 1691, and his famous *Dissertation on the Epistles of Phalaris*, established his reputation as the greatest scholar of his age. In 1700 he was appointed master of Trinity Coll., Cambridge; in 1717 regius prof. of divinity. At Cambridge he was constantly engaged in litigation or dispute either with the authorities or some individual. His various scholastic contro-

versies gave rise to Swift's *Battle of the Books*, and, having incurred the enmity of Pope, he was satirized in *The Dunciad*. Besides writings already referred to, Bentley pub. various annotated editions of the classics, including Terence and Horace, and of Milton's *Paradise Lost*.

Monk, *Life* (1833); Sir R. Jebb, *Life* (1882); vol. ix. of *Cambridge History of Literature*.

**Bentley**, RICHARD (1794–1871), Eng. publisher, was in partnership with Henry Colburn (1829–32). Founded *Bentley's Miscellany* (1837), with Dickens as first editor; also issued 127 standard novels.

**Bentzon**, THÉRÈSE (1840– ), pseudonym of Marie Thérèse Blanc, Fr. novelist and critic; has written large number of novels and volumes of short stories. Best novels, characterized by serious moral tone, are *La Vocation de Louise* (1873), *L'Obstacle* (1879), *Tony* (1884), and *Constance* (1891).

**Benue**, principal trib. of Niger, W. Africa (7° 40' N., 6° 45' E.); length, 800 m.

**Ben Venue**, mt., 2,393 ft., S.W. Perthshire, Scotland (56° 13' N., 4° 28' W.), 10 m. W. by S. of Callander; centre of Trossachs, at S. end of Loch Katrine.

**Benvenuto** (1481–1559), Ital. painter, known as Tisio da Garofalo; his larger compositions are hard in drawing but rich in colour. His fine *Vision of St. Augustine* is in National Gallery, London.

**Benvenuto Cellini**. See CELLINI, BENVENUTO.

**Ben Voirlich**, mt., 3,224 ft., S. Perthshire, Scotland (56° 20'

N., 4° 13' W.); mentioned in Scott's *Lady of the Lake*.

**Ben Wyvis**, mt., 3,429 ft., Ross and Cromarty, Scotland (57° 41' N., 4° 34' W.).

**Benyowsky**, MAURICE AUGUST, COUNT DE (1741-86), Hungarian who, after various vicissitudes in Austria and Poland, went to France, and in attempt to found Fr. colony in Madagascar (1774) was made king by natives (1776). Fell in battle, leading his Malagasy followers against French.

**Benzaldehyde** (bitter almond oil),  $C_6H_5CHO$ , a liquid; b.p. 179°; obtained from toluene; used in preparation of numerous coal-tar colours.

**Benzamine**. See EUCAINE.

**Benzene**, or BENZOL ( $C_6H_6$ ), colourless, mobile, highly refracting, volatile liquid having inflammable vapour; m.p. 5.4°, b.p. 80.4°; sp. gr. 0.899 at 0°; solvent for fats, resins, etc.; obtained from coal tar; important in dyeing industry for preparation of its derivatives; of great theoretical interest, its molecule being formed by a ring of six carbon atoms, to each of which one hydrogen atom is attached; the derivatives are termed aromatic or benzenoid compounds. See CHEMISTRY.

**Benzidine** (*Para-diamino-diphenyl*) ( $NH_2.C_6H_4.C_6H_4.NH_2$ ), diacid base crystallizing in scales; m.p. 122°, b.p. 360°; of considerable technical importance in preparation of cotton dyes.

**Benzine**. See BENZOLINE.

**Benzoic Acid** ( $C_6H_5COOH$ ), aromatic acid, volatile crystalline solid; m.p. 121.4°, b.p. 249.2°; prepared from coal-tar toluene. It and its compounds

are used medicinally as antiseptics, for the preparation of dyes, and in perfumery.

**Benzoin**. (1)  $C_6H_5CHOH.CO.C_6H_5$ , colourless crystalline solid; m.p. 137°, b.p. 343°. (2) Or GUM BENZOIN, yellowish-brown balsamic resin, obtained from *Styrax benzoin*, used in preparation of antiseptic ointments and the antiseptic tincture (friar's balsam), and as incense. (3) Name for *Lindera*, a genus of over sixty species of trees and shrubs in N. America and India.

**Benzoline**, or BENZINE, a mixture of lower boiling paraffins; got by distillation of Amer. or Russian petroleum or of Scot. shale oil: often confused with benzene or benzol, which it resembles: highly inflammable.

**Benzophenone** (*Diphenyl Ketone*) ( $C_6H_5.CO.C_6H_5$ ), a dimorphous aromatic ketone; b.p. 306°. Its derivative, *Tetramethyl-diamido-benzophenone*,  $CO[C_6H_4.N.(CH_3)_2]_2$ , is important technically in the manufacture of dye-stuffs.

**Benzyl Alcohol**, or PHENYL CARBINOL ( $C_6H_5CH_2OH$ ), colourless aromatic liquid; b.p. 206°.

**Benzyl Bromide** ( $C_6H_5CH_2Br$ ), mobile liquid obtained by action of hydrobromic acid on benzyl alcohol, or by the action of bromine on toluene; used during Great War, like chloride, in lachrymatory shells; b.p. 198° C.; vapour nearly six times denser than air.

**Benzyl Chloride** ( $C_6H_5CH_2Cl$ ), pungent-smelling liquid; b.p. 176° C.; used in colour industry.

**Beöthy**, ZOLTAN (1848- ), Hungarian author, member of Hungarian Academy; publications include several meritorious

novels, also *History of Hungarian Literature* (1891) and *History of Hungarian Prose* (1886).

**Beowulf**, earliest Eng. epic, in which are incorporated many Teutonic traditional stories; considered the parent of modern literatures. It probably was composed in the latter part of the 7th cent., but date, and still more place of action, is matter of discussion. It is in West Saxon dialect; but most scholars hold it to be a transcription from a northern or midland dialect. The single ms. containing the story is in the Cottonian Collection (Vitellius, A 15), Brit. Museum. The following is a brief outline of the epic. Beowulf, nephew of Hygelac, King of the Geatas, hears of the ravages committed by Grendel, a monster in human form, at the court of Hrothgar, King of the Danes. He therefore sets sail for Hrothgar's court with fourteen companions, is kindly received by Hrothgar, and, lying in wait by night for the monster, succeeds, after a fierce struggle, in tearing off its arm. By means of bloodstains Grendel is traced to his lair, which lies beneath a distant mere. The night following, the king's hall (Heorot) is visited by Grendel's mother, who carries off a noble. Beowulf follows, plunges into the mere, fights with and kills the female monster, cuts off the head of the dead Grendel, and returns in triumph. Handsomely rewarded by Hrothgar, Beowulf returns to his own land, succeeding eventually to his uncle's kingdom, where he reigned happily for some fifty years. At the end of that time

a fiery dragon begins to lay waste his country; Beowulf, now an old man, goes forth against the monster, which he succeeds in slaying, but also receives mortal hurt from its flaming breath. See *EPIC THE*.

Eng. prose trans. by J. R. C. Hall (1911); verse by William Morris (1895).

**Bequeath**, legal term for transmission of personal estate by will, in contrast with 'devise,' the term for transmission of real estate; but if the testator's intention is clear, 'bequeath' will also carry real estate.

**Béranger**, PIERRE JEAN DE (1780-1857), French song-writer; born in Paris. When on the brink of starvation (1802) he besought the patronage of Lucien Bonaparte, who made him a small allowance; later he procured a clerkship in the univ. Between 1808 and 1812 were written and handed about *Les Gueux*, *Le Bœuf Gras*, and the *Petit Homme Gris*; while his *Roi d'Yvetot* (1813) made his name familiar throughout France. In 1815 his songs were collected into a vol., and in 1821 a second vol. appeared, for which Béranger was imprisoned for three months. In 1825 *Chansons Nouvelles* appeared, and in 1828 *Chansons Inédites*, for the publication of the latter of which, containing his democratic and anti-papal views, he was fined 10,000 francs and imprisoned for nine months. *Dernières Chansons*, his last vol., was pub. in 1857. His songs were witty, full of high feeling and pathos, and by them Béranger acquired a great political influence and an unrivalled hold on the hearts of the Fr. people.

**Berar.** See HAIDARABAD.

**Érard, JOSEPH FRÉDÉRIC** (1789-1828), Fr. physician and philosopher, was a supporter of the vitalistic doctrines of the school of Montpellier as opposed to the materialistic theories of the Paris savants. Principal works are *Doctrine Médicale de l'Ecole de Montpellier* (1819), and *Doctrine des Rapports du Physique et du Moral* (1823).

**Beraun**, tn., Czecho-Slovakia (49° 58' N., 14° 4' E.); textiles, cement. Pop. 11,500.

**Berber**, prov. and tn., Anglo-Egyptian Sudan (17° 58' N., 34° E.), on E. bk. Nile; commercial centre; cotton. Pop. of prov. 88,000; tn. 13,000.

**Berbera**, chief seapt. tn., Brit. Somaliland, N.E. Africa (10° 26' N., 45° E.); annual fair of inland tribes, Oct. till April, attended by 20,000 persons. Pop. c. 3,500.

**Berberidaceæ**, family of nearly 200 species of perennial herbs and shrubs, latter often spiny; found in N. temperate regions. See BERBERIS.

**Berberine** ( $C_{20}H_{17}NO_4$ ), yellow crystalline solid alkaloid occurring in *Berberis* and other plants.

**Berberis**, genus of shrubs of about 100 species found in N. temperate regions and at high altitudes in tropics and S. America; one species, *B. vulgaris*, the common barberry, occurs in Britain. *Mahonia* is a section of the genus, though sometimes regarded as a distinct genus.

**Berbers**, people of Hamitic race ranging over N. Africa southward to the Senegal, forming three-fifths of the pop. of Algeria, and a still larger proportion of the people of Morocco.

Four main divisions: (1) Kabyles of Algeria and Morocco; (2) Shulala (Shulahs) of the upland Atlas valleys; (3) Haratin (Black) Berbers of the S. Atlas slopes; and (4) the Saharan Tuaregs. Now generally held that Berbers form the original stock of the European races. Total number probably about 3,000,000.

**Berbice**, co., Brit. Guiana, S. America (6° 10' N., 57° 30' W.); tobacco, rubber, coco-nuts, vanilla, and limes. Pop. 60,000.

**Berchem**, suburb of the city of Antwerp, Belgium. Pop. 30,400.

**Berchem, NICOLAAS** (1620-83), Dutch painter; generally painted Ital. scenery, with ruins and figure groups. Pictures by him are in Wallace Collection, also in the National, Edinburgh, Dulwich, and many of the continental galleries.

**Berchtold, LEOPOLD ANT. JOH. SIGISMUND, COUNT VON** (1863- ), Austrian statesman, who early abandoned his Austrian nationality in favour of that of Hungary. After holding various minor positions in diplomatic service he became ambassador to Russia (1906). In 1912 he succeeded Aehrenthal as Austro-Hungarian foreign minister, and one of his first announcements was: 'It will be our honest endeavour to maintain our traditionally good relations with England.' But he was only a figurehead, the tool of the aggressive military and clerical groups whose policy he was forced to carry out under the domination of Tisza, the Hungarian premier. At end of first Balkan War (1912) he prompted Bulgaria to attack Serbia, hoping that the defeat

of latter would open up for Austria the road to Salonica and the Aegean. Following the Serajevo incident, Berchtold presented the fatal ultimatum to Belgrade, which was a challenge not only to Serbia but to Russia and the Allies. Following on differences with Tisza in Jan. 1915 he resigned office, and\* in March of the following year received an appointment at court.

**Berck**, wat.-pl., Pas-de-Calais, France (50° 24' N., 1° 36' E.); fisheries. Pop. 11,600.

**Berdichev**, tn., Ukraine, Russia (49° 53' N., 29° 35' E.); silk, cereals, iron; four fairs annually. Pop. 75,000 (50,000 Jews).

**Berdiansk**, or **BERDIANSK** (46° 40' N., 36° 52' E.), ice-free seapt., Sea of Azov, Ukraina; grain. Founded 1827. Pop. 30,000.

**Berea**. (1) Tn., Kentucky, U.S. (37° 37' N., 84° 15' W.); college, formerly for co-education of whites and negroes. Pop. 700. (2) Tn. and dist., Basutoland, Africa (29° 16' S., 27° 42' E.); mission station. (3) Suburb of Durban, Natal, S. Africa.

**Bereans**, 18th cent. Scot. religious sect which resisted everything save Biblical authority.

**Beregszacz**, tn., Hungary (48° 13' N., 22° 39' E.); alum; mill-stones. Pop. 10,000.

**Berehaven**, tn. and roadstead, N. shore of Bantry Bay, Ireland (51° 39' N., 9° 55' W.); used by Brit. fleet as base during Great War. Pop. c. 2,000.

**Berengar I.**, King of Italy (887-924); crowned emperor (915); murdered after life of warfare; his grandson, Berengar II. (d. 966), was crowned in 950; died prisoner of Emperor Otto I.

**Berengaria of Navarre**, married (1191) Richard I. of England.

**Berengarius of Tours** (998-1088), Fr. theologian; denied transubstantiation and founded sect condemned by ten councils.

**Bérenger**, **VICTOR-HENRY** (1867- ), Fr. man of letters; chief works, *L'Effort* (1893), *La Proie* (1897), *La France Intellectuelle* (1900), *Le Génie de la France* (1901).

**Berenice**, anc. seapt., Red Sea, Egypt (23° 53' N., 35° 27' E.); founded by Ptolemy II. (275 B.C.)

**Berenice**, name of several Egyptian and Jewish princesses, one of whom was mother of Ptolemy Philadelphus, another his daughter; another was daughter of Ptolemy Auletes and elder sister of the notorious Cleopatra; still another Berenice was daughter of Salome, wife of Aristobulus and sister of King Herod I.

**Beresford**, **LORD CHARLES WILLIAM DE LA POER**, 1ST BARON (1846-1919), Brit. admiral and politician; second son of 4th Marquess of Waterford; famous for gallantry in *Condor* at bombardment of Alexandria (1882); commanded Channel Squadron (1903-5); admiral (1906); commander of Mediterranean Fleet (1905-7); commander of Channel Fleet (1907-9); M.P. (Unionist) for Portsmouth (1910-16); raised to peerage (1916); was keen naval critic and leader of the 'Big Navy' party.

**Beresford**, **WILLIAM CARR BERESFORD**, **VISCOUNT** (1768-1854), Brit. general; illegitimate son of George de la Poer Beresford, 1st Marquess of Waterford; distinguished in Peninsular War; surprised and outmanœuvred by

Soult at Albuera (1811); day saved by Brit. infantry; created Baron of Albuera and Dun-garvan (1814); viscount (1823); general (1825).

**Berezina.** (1) Tn., Russia (53° 50' N., 29° E.). Pop. 10,000. (2) Riv., Russia (52° 50' N., 29° 30' E.); trib. of Dnieper; noted for disastrous passage of Napoleon's army during retreat from Moscow (1812).

**Berezna**, tn., Ukraine, Russia (51° 35' N., 31° 48' E.); bricks, candles. Pop. 11,000.

**Berezov**, tn. and dist., Tobolsk, Siberia (63° 53' N., 65° 6' E.); furs, salted fish; was place most dreaded by prisoners banished to Siberia; average temp. 25° F. Pop. 1,000.

**Berezovsk**, tn., Perm, Russia (56° 53' N., 60° 53' E.); gold mines. Pop. 10,000.

**Berg.** (1) Former duchy of Germany (51° N., 7° E.): ceded to and incorporated with Prussia in 1815. (2) Suburb of Stuttgart, Württemberg, Germany; mineral baths; woollens.

**Bergaigne**, ABEL HENRI JOSEPH (1838-88), Fr. orientalist and grammarian; prof. of Sanskrit at the Sorbonne; several important translations from Sanskrit.

**Bergama** (anc. *Pergamos*), tn., Anatolia, Asia Minor (39° 5' N., 27° 10' E.); parchment invented here; leather. Pop. c. 14,500.

**Bergamo**, prov. and tn., N. Italy (45° 42' N., 9° 40' E.); silks, cottons, hats. Pop. of prov., 510,200; tn., 55,500.

**Bergamot**, OIL OF, a limpid, greenish-yellow fragrant fluid, used in perfumery; obtained by expression from fresh peel of bergamot, the fruit of a member

of orange family cultivated in S. Calabria and France.

**Bergedorf**, tn., Germany (53° 28' N., 10° 12' E.); on Elbe; market gardens; leather, glass, bricks. Pop. 14,900.

**Bergen**, seapt. and fort. tn. at head of Byfjord, Norway (60° 24' N., 5° 20' E.), founded 1070; formerly principal Norweg. port; second largest tn.; principal shipowning centre; cathedral, museum, and churches; tourist centre; birthplace of Ole Bull and Edvard Grieg; fish and fish products. Pop. 77,000.

**Bergen-op-Zoom**, tn., N. Brabant, Holland (51° 30' N., 4° 18' E.); sugar-beet industry; oyster culture; resisted Spaniards (1581, 1588, 1605, and 1622); succumbed to French (1747). Pop. (comm.) 15,500.

**Bergerac**, tn., France (44° 52' N., 0° 29' E.); flour mills, breweries, paper mills; grain, wine, salmon; millstone quarries. Huguenot stronghold 16th and 17th cents. Pop. 16,200.

**Bergerac.** See CYRANO DE BERGERAC.

**Bergk**, THEODOR (1812-81), Ger. philologist; pub. *Poetae Lyrici Graeci* (1843), *Griechische Literaturgeschichte* (1872-87), *Anthologia Lyrica*, and editions of Anacreon and other class. authors.

**Bergson**, HENRI (1859- ), Fr. philosopher, prof. at the Collège de France, and exponent of the *Philosophy of Change*, according to which previous systems of thought attach too much importance to knowledge. Life is first to be explained, and gives a key to the nature of knowledge. Knowledge has a value in serving life. The intel-

lect and instinct are two modes of the mind's activity, developed along different lines of evolution, to serve the needs of the organism. But in 'INTUITION' we have a power of apprehending reality directly, a sympathetic attitude by which we seem to enter into it. Elected to French Academy, 1914. During Great War was entrusted with missions to Spain and U.S.

Carr, *Henri Bergson* (1912).

**Berg Winds**, hot winds that blow from April to Sept. between False Bay and Port Elizabeth. They last about twenty four hours, and occur about six times every season.

**Berhampur.** (1) Munic. tn., Madras Presidency, India ( $19^{\circ} 18' \text{ N.}, 84^{\circ} 48' \text{ E.}$ ); tussore silk, gold embroidery. Pop. 26,000. (2) Munic. tn., Bengal Presidency, India ( $24^{\circ} 8' \text{ N.}, 89^{\circ} 16' \text{ E.}$ ); military cantonment after Plassey; barracks now used for civil purposes. Pop. 25,000.

**Beriberi**, disease occurring in Japan, Korea, S. China, Malay Peninsula, Burma, Ceylon, E. Africa, and the W. Indies, and carried by ships to different parts of the world; not contagious, but breaks out from time to time in the same localities, and was supposed to be due to a fungus infecting rice. It is now considered to result from absence of essential component of food called 'vitamines.' There are two types of the disease, which is sometimes of prolonged duration—one *paralytic*, the symptoms beginning in legs, which are tender on pressure, and extending to other parts of body; the other *edematous*, in which tissues,

especially of legs, are swollen and infiltrated with fluid, and there is difficulty in breathing. Treatment consists in combating the symptoms, heart weakness, etc., as they appear, along with abundant fresh food.

**Bering**, *VITUS* (1680-1741), Danish explorer, employed by Peter the Great; discovered and explored Bering Sea and Strait; died on Bering I.

**Bering Island**, or *AVATCHA* ( $55^{\circ} 17' \text{ N.}, 165^{\circ} 26' \text{ E.}$ ), one of Komandor group, belongs to Russia. Barren and treeless. Area, 615 sq. m.; pop., including the neighbouring Copper I., 650.

**Bering Sea** (limited by  $52^{\circ}$ – $65^{\circ} \text{ N.}, 160^{\circ} \text{ W.}$ – $160^{\circ} \text{ E.}$ ) is connected with Arctic Ocean by Bering Strait (crossed about middle by  $65^{\circ} 52' \text{ N.}, 168^{\circ} \text{ W.}$ ). Proposals have been made to bridge or tunnel the strait, and thus link up Siberian Ry. with Canadian system.

**Bering Sea Controversy**, a dispute between U.S. and Great Britain arising out of pelagic sealing in Bering Sea. U.S. claimed (1) that they had exclusive jurisdiction over Bering Sea; (2) that seals were domestic animals, and therefore Amer. property when captured; (3) that they should be protected. Arbitrators decided against U.S. (1893), but closed area around Pribylov Islands. This prohibition proved ineffectual, and in 1911 a convention, effective for fifteen years, was proclaimed between U.S., Great Britain, and Japan, prohibiting pelagic sealing in Pacific Ocean N. of  $30^{\circ} \text{ N. lat.}$

**Bériot**, *CHARLES AUGUSTE DE* (1802-70), Belgian violinist and

composer; married Malibran, the eminent vocalist; prof. successively at the Conservatoires of Paris and Brussels.

**Berislav**, or **BORISLAV**, tn., Ukraine, Russia ( $46^{\circ} 50' \text{ N.}$ ,  $33^{\circ} 15' \text{ E.}$ ); important trading centre. Pop. 12,000.

**Berja**, tn., Almeria, Spain ( $36^{\circ} 48' \text{ N.}$ ,  $2^{\circ} 56' \text{ W.}$ ); lead mines, cotton mills, and candle works. Pop. 13,000.

**Berkeley**. (1) Par. and mrkt. tn., Gloucestershire, England ( $51^{\circ} 42' \text{ N.}$ ,  $2^{\circ} 28' \text{ W.}$ ); birthplace of Jenner, pioneer of vaccination; old church and castle; cheese. Pop. (dist.) 6,500. (2) City, California, U.S. ( $37^{\circ} 51' \text{ N.}$ ,  $122^{\circ} 16' \text{ W.}$ ), named after Bishop Berkeley; seat of California Univ. Pop. 40,400.

**Berkeley**, **GEORGE** (1684–1753), Irish philosopher; friend of Steele, Swift, Addison, etc.; resolving to establish centre of Christian civilization in Bermuda, went to Rhode I. (1728), but, as promised grant was not paid, returned (1731); made Bishop of Cloyne (1734), he worked zealously for people's welfare; resigned bishopric (1752), and died at Oxford. Berkeley wrote on economics, *Querist* anticipating Adam Smith. In his *Essay towards a New Theory of Vision* he argues that the immediate objects of sight are all mind-dependent appearances, which form what is practically a natural language. This was followed by *A Treatise on the Principles of Human Knowledge*, in which he advanced the theory that the actuality of the seen world depends on its being perceived, and that this involves

the assumption of creative Eternal Reason. The last word in Berkeley's philosophy is found in *Siris*, the most curious and yet most profound Eng. book on metaphysics. Its profound speculation was obscured by the controversy to which its therapeutic doctrines gave rise, and only of late years has it received the attention it deserves. Revised complete ed. of his works by Fraser (Oxford, 4 vols. 1901). See **IDEALISM**.

**Berkeley**, **MILES JOSEPH** (1803–89), Eng. botanist; founder of Brit. mycology (scientific fungus study); prolific writer on fungi and botany in general.

**Berkhampstead**, or **GREAT BERKHAMPSTEAD**, mrkt. tn. and urban dist., Hertfordshire, England ( $51^{\circ} 46' \text{ N.}$ ,  $0^{\circ} 34' \text{ W.}$ ); birthplace of William Cowper; straw-plaiting, chemical manufacture, turned woodware. Pop. 7,300.

**Berkshire**, inland co., England ( $51^{\circ} 21' \text{--} 51^{\circ} 47' \text{ N.}$ ,  $0^{\circ} 33' \text{--} 1^{\circ} 40' \text{ W.}$ ), separated from Buckinghamshire and Oxfordshire by Thames; borders also on Hampshire, Surrey, and Wiltshire. Generally undulating and moderately well wooded; principal hills are Berkshire Downs, or White Horse Hills, with Cumnor Hurst in n.w. and Inkpen Beacon near s.w. boundary. It is watered by Thames, Ock, Kennet, Cole, Lambourn, and Pang. Seven-ninths of area is under cultivation, oats being the chief crop; dairying and grazing also successfully engaged in. There are biscuit factories, seed warehouses, and nurseries (Reading); iron foundries, engineering works, boat-building, carpet and cloth-



ing factories. Windsor Castle, Cumberland Lodge, Cranbourne Lodge, and Frogmore are in county. Chief towns are Reading, Windsor, Abingdon, Newbury, Wallingford, and Wokingham. Chief natural curiosity is the great 'White Horse,' nearly 400 ft. in length, cut on chalk hillside in Vale of Ock, traditionally said to commemorate battle of Ashdown (861), but probably pre-Roman. Reading and Windsor each return a member to Parliament, while three others represent divisions of Abingdon, Newbury, and Wokingham. Area, 896 sq. m.; pop. 271,000.

**Berkshire Regiment, ROYAL, PRINCESS CHARLOTTE OF WALES'S OWN.** 1st Batt. of this regiment was old 49th Foot, formed in 1714; in 1744 augmented by body of men raised in Jamaica, and known as Trelawny's Regiment. Its light company fought through Amer. War of Independence. In 1782 became Hertfordshire Regiment, and in 1815 acquired additional title, Princess Charlotte of Wales's Own. 2nd Batt. dates from 1755, being raised as battalion of 19th Foot; in 1758 was the 66th Foot, and in 1782 received title of Berkshire Regiment. War honours up to Great War: St. Lucia, 1778; Egmont-op-Zee; Copenhagen; Douro; Talavera; Albuera; Queenstown; Vittoria; Pyrenees; Nivelle; Orthes; Peninsula; Alma; Inkerman; Sevastopol; Kandahar, 1880; Afghanistan, 1879-80; Egypt, 1882; Tofrek; Suakin, 1885; S. Africa, 1899-1902.

In the Great War the regiment numbered three regular and spe-

cial reserve battalions, including the Royal Berks Militia, the T.F. battalion, three service battalions, and the garrison battalion.

1914.—1st Batt. (2nd Division, 6th Infantry Brigade) was part of original B.E.F.; engaged about Maroilles; in Ypres area (Oct.); one of the units which blocked way of enemy near Kruseik on Passchendaele-Becelaere road; suffered heavy casualties.

1915.—8th Service Batt. in battle of Loos. 1st Berkshire Yeomanry (T.F.) at Gallipoli in Hill 70 fighting.

1916.—2nd Batt. (25th Brigade) in battle of Somme; took part in attack of 10th and 3rd Corps around Thiepval; 6th Batt. in Mametz district; also in assault on Pommiers Redoubt near Carnoy. 5th (19th Division) took part in capture of La Boisselle (July); 6th Batt. later in month fought in Delville Wood and at Longueval, 1st Batt. holding defensive positions in same wood. 4th Batt. (Sept.) conspicuous in capture of Pozières. 8th Batt. in High Wood made gallant but unavailing attempts to advance; during same period co-operated in attack of 1st Division on High Wood. Other battalions fought at Schwaben Redoubt and Cloudy (Sept. and Oct.); in battle of Ancre and operations for capture of Beaumont Hamel.

1917.—6th Batt. fought well at Grandcourt and Grevillers; in July attack in Ypres district near Hooze. 8th (Service) Batt. in neighbourhood of Yser Canal. Later both 6th and 8th suffered severely in the Passchendaele battles.

1918.—4th (T.F.) Batt. counter-

attacked (March 21) in terrible second battle of Somme near Maissemy, losing Colonel Dimmer, v.c. Captain Willick, who succeeded, was killed during attack on Lamotte shortly afterwards. In spite of terrible losses counter-attacked on following day between Maissemy and Villecholes. In same battle 8th Batt. (18th Division) with West Kents and Buffs put up grand defence at Fort Vendeuil and other redoubts in this sector. 5th Batt. had fearful losses near Mesnil. In same battle 2nd Batt. very conspicuous in defence near Moreuil. In this desperate Somme fighting 6th Batt. (3rd Corps) offered gallant resistance s. of Canal du Nord. 5th Batt. took part in defence of Albert sector (early April). 2nd Batt. near Villers Bretonneux in Ger. tank attack on General Butler's 3rd Corps, also in subsequent advance; in May, though reduced to a handful, put up heroic resistance in battle of Chemin des Dames.

1919.—Regiment concluded its fine war record by taking prominent part in great Allied advance. 8th Batt. in Rawlinson's army; conspicuous in Trônes Wood and St. Pierre Vaast region. Regular battalions in Byng's 3rd Army operating between Ablainzeville and Moyenneville, and in Horne's 1st Army advancing from Arras. 8th in battle of Selle R., while other units distinguished themselves in the fighting for the Drocourt-Quéant switch in the Hindenburg Line.

**Berlad**, or **BARLAD**, tn., N. Rumania (46° 14' N., 27° 38' E.); candles and soap; important annual horse fairs. Pop. 25,000.

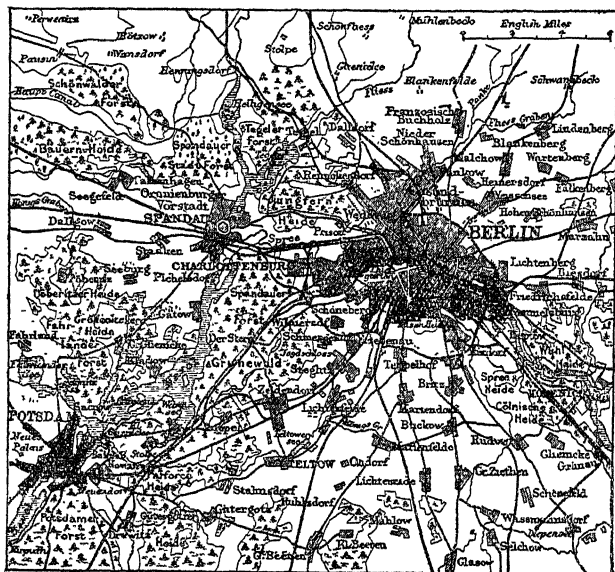
**Berlichingen**, **GOETZ** (or **GOTT-FRIED**) **VON** (1480–1562), Ger. robber knight; lost hand in war and wore iron substitute, still preserved; became a supporter of Luther; his autobiography, ed. by Pistorius (1731), inspired young Goethe to write his stirring drama of *Goetz von Berlichingen* (trans. by Scott 1799).

**Berlin**, city, cap. of republic of Prussia and of Ger. Empire, on Spree (52° 30' N., 13° 24' E.); was residence of Hohenzollern family from 1442 to 1918; sacked several times during Thirty Years' War; suffered in Seven Years' War and Fr. revolutionary wars. Its importance dates from time of Great Elector, Frederick William, by whom modern town was laid out. His son, Frederick I., constructed Friedrichstadt (1688); there has been enormous building activity since 1870.

Height is c. 100 ft. above sea; site level; well laid out, with many fine streets; third town in size, and before Great War perhaps cleanest in Europe. The Spree divides city into two parts; on its r. bk. are oldest parts, Old Berlin, with the Rathaus, and, finally united to it in 15th cent., Old Kölln, with royal palace, on an island. Seventy-five per cent. of buildings are modern, a large proportion being very good modern Renaissance work showing Fr. influence; principal old buildings are Kloster Kirch and three other churches. Principal street is famous Unter den Linden, over a mile long, formed by three avenues of lime trees; it contains numerous public buildings, government offices, statues, etc., and claims to

be the finest street in Europe. It is entered at w. end by Brandenburger Thor, celebrated gateway, copied from Propylæa, Athens, leading to the chief park, the Thiergarten, in the E. of which is the magnificent Sieges Allee (Avenue of Victory), lined with marble statues of the Hohen-

rectangular building in the Renaissance style. The Schlossbrücke is adorned with eight groups of marble statuary. Opposite the palace is the new Renaissance cathedral. Other important streets run parallel, and at right angles, to Unter den Linden, the ground having been



*Berlin and Environs.*

zollerns, and leading to the Königsplatz, where stands the lofty column of Victory (1873, commemorating the triumph over France). Here also are the new Reichstag building (1884-94), a new royal opera-house, and monuments to Bismarck and Moltke; also a royal palace, an enormous

systematically laid out. Leipziger Strasse is a busy thoroughfare through which traffic flows over Leipziger Platz, Potsdamer Strasse, and Potsdamer Platz, to the w.; Friedrichstrasse, with its famous shops, stretching for over 3 m., starts from Belle-Allianceplatz, and crosses Unter

den Linden and Leipziger Strasse on its way N. to its continuation, the Chausseestrasse. Wilhelmstrasse, street of palaces, starts like Friedrichstrasse at Belle-Allianceplatz, and runs to the Linden; from same centre Königstrasse radiates to Leipziger Platz; in it are War Office, General Post Office, etc., and most fashionable shops. There are many modern churches, including new cathedral. Univ., founded 1810, N. of Opern Platz, is foremost in Germany; near it is the Royal Library. The National Gallery and museums are all near the Lust-Garten; theatres are numerous. There are many bridges over river, and everywhere are statues and monuments; W. end is favourite residential quarter; in E. are works and factories, in N. foundries, and in N.W. hospitals, law courts, etc.

Berlin's geographical situation in centre of N. Prussia and of waterways covering dist. between Elbe and Oder, and at crossing of lines of communication between Brandenburg, Silesia, Saxony, Hanover, Mecklenburg, and Pomerania, is commercially advantageous. Great manufacturing city; produces woollens, cottons, porcelains, earthenware, machinery, metal goods, beer, paper, gold, silver, and bronze work, hardware, etc. Pop. 3,000,000.

For a vivid picture of Berlin just before the Great War, see Price Collier's *Germany and the Germans*, ch. v. (1913); also consult Baedeker, *Berlin* (1912).

**Berlin**, CONGRESS OF, took place in 1878, to reconsider terms of Treaty of San Stefano between Turkey and Russia, which had

caused dissatisfaction to other powers, in particular to Britain and Austria. Representatives of Britain, France, Austria, Germany, Russia, and Turkey met on June 13, and on July 13 Treaty of Berlin was concluded, which considerably modified that of San Stefano. By it Bulgaria was divided into Bulgaria proper and Eastern Rumelia; Bosnia and Herzegovina were to be occupied by Austria; Rumania, Serbia, and Montenegro were to be made independent; and Ardahan, etc., ceded to Russia.

**Berlin**, Ontario, Canada. See KITCHENER.

**Berlin**, city, New Hampshire, U.S. (44° 28' N., 71° 12' W.); pulp, paper, lumber. Pop. 11,800.

**Berlin Act** (1885) was the outcome of a conference of thirteen European powers and U.S. which took place at Berlin to dispose of (1) the international rivalry for control of the Congo; (2) the conflicting claims of France and Britain to Niger; (3) the competition of the powers to effect annexations on African coast. As a result the boundaries of the Belgian Congo State were defined, and freedom of trade established in the whole of the basin of that river. Freedom of navigation was also established on the Niger, the execution of the treaty being entrusted to France and Britain for the upper and lower reaches respectively. With regard to future annexations, notification to the other powers was laid down as indispensable, and each power was required to secure freedom of trade and transit in its African possessions. The treaty was ratified by all the

powers except U.S., which did not wish to incur international responsibility outside Europe.

**Berlin Decrees**, issued by Napoleon when at Berlin (1806), establishing continental blockade with idea of destroying Brit. commerce; also known as *Continental System*.

**Berlinhafen**, port, Brit. (formerly Ger.) New Guinea ( $3^{\circ} 5' \text{ s.}$ ,  $142^{\circ} 24' \text{ e.}$ ), was captured by Australian fleet without opposition (Sept. 1914).

**Berlioz**, HECTOR (1803–69), Fr. musical composer; pioneer of the Romantic movement in music; influenced, as all the Fr. *Romantiques* were, by England. He married Miss Smithson, an Irish actress of Shakespearean characters whose acting kindled in him a passionate admiration of the English poet's writings which remained throughout life, and inspired some of his best works. His compositions include *Benvenuto Cellini*, *La Damnation de Faust*, *Roméo et Juliette*, *Béatrice et Bénédicte*, which are the glories of Fr. music. Had a supreme command of orchestration, and in many respects resembled Wagner. Wrote numerous works, including *Autobiography* (trans. 1905).

**Bermejo**, river, flowing s.e. through Argentine Chaco to join Paraguay R. ( $25^{\circ} 38' \text{ s.}$ ,  $60^{\circ} 14' \text{ w.}$ ). Length, 1,300 m.

**Bermondsey**, metropolitan bor., one of three divisions of parl. bor. of Southwark; centre of leather industry. Pop. 126,000.

**Bermudas**, Brit. crown colony, consisting of about 300 small islands in N. Atlantic (between  $32^{\circ}$  and  $33^{\circ} \text{ N.}$ ,  $65^{\circ} \text{ W.}$ ); oldest

colonial representative government in Brit. Empire; principal islands, Bain I., St. George, and Ireland—on last named is an important naval dockyard; favourite health resort for U.S. and Canada; early vegetables. Cap. Hamilton. Area of islands, 19 sq. m.; pop. 19,000.

**Bermudez**, state, Venezuela ( $9^{\circ} \text{ N.}$ ,  $64^{\circ} \text{ W.}$ ); cap. Cumana. Area, 32,240 sq. m.; pop. 310,000.

**Bern**, or **BERNE**. (1) Cap. Switzerland and of canton Berne ( $46^{\circ} 57' \text{ N.}$ ,  $7^{\circ} 26' \text{ E.}$ ); situated on rocky peninsula, almost surrounded by riv. Aar; commands magnificent Alpine views of Bernese Oberland; principal buildings, Gothic Münster, Federal Council Hall, univ., museum; bear pit (*bern* signifies a bear); textiles, mathematical instruments, musical boxes; made free imperial city (1218); federal cap. (1848). The city is the centre of several international bureaux—e.g., Copyright Union, International Postal Union, etc. Pop. 91,000. (2) Canton, Switzerland; most populous and second largest in area; contains Bernese Oberland in s.; mountain pine forests; fertile valleys; majority of inhabitants German-speaking Prot.; grain and cattle; watch making, wood carving. Area, 2,657 sq. m.; pop. 642,700.

*The Berne Convention*, revised in 1908, secures reciprocity of copyright to the contracting countries. It applies to all great European countries except Austria, Hungary, Russia, and Turkey, and to Japan, etc. The countries which are party to the agreement are united in the Copyright Union. See COPYRIGHT.

**Bernadotte.** See CHARLES XIV of Sweden.

**Bernard, St.** (1090–1153), Fr. monastic reformer, of a noble Burgundian house; entered monastery of Cîteaux (c. 1112); chosen as one of party to found daughter monastery of Clairvaux, where life was rigidly ascetic. Bernard became famous (1130) for support of election of Innocent II. to Papacy; rebuilt Clairvaux (1135); preached Second Crusade (1145), and when it failed tried to reorganize it. Bernard's influence in Europe as abbot of Clairvaux was enormous; his greatness was due to personality and character rather than to intellect. Great opponent of Abelard, and strongly conservative; believed heresy should be met by argument, but advocated persecution rather than allow it to spread; his devotional works continue to be read.

Morison, *Life of St. Bernard*; Vacandard, *Vie de St. Bernard*.

**Bernard, St., of Menthon** (923–1008), founder of monasteries and hospices on passes of Alps (Great and Little St. Bernard); feast, June 15.

**Bernard, Claude** (1813–78), Fr. physiologist, noted for researches on poisons, functions of pancreas, glycogenic function of liver, and vaso-motor system.

**Bernard, John Henry** (1860–), Brit. scholar and preacher; Bishop of Ossory (1911); Archbishop of Dublin (1915); Provost of Trinity Coll., Dublin (1919); a capable administrator, his statesmanship attracted much attention during sittings of Irish Convention (1917–18); ed. *Kant's Critical Philosophy* (along with Sir John Mahaffy), etc.

**Bernard, Mountague** (1820–82), Eng. lawyer and legal writer; served on many international commissions, including *Alabama* arbitration case (1872).

**Bernard-Beere, Mrs. Fanny Mary** (1859–1915), Eng. actress; excelled in emotional parts.

**Bernays, Lewis Adolphus** (1831–1908), English scientist; founded Queensland Acclimatization Society; pub. *The Olive and its Products*, etc.

**Bernburg, tn., Anhalt, Germany** (51° 48' N., 11° 44' E.); founded 10th cent.; lead and zinc smelting; sugar; pottery; saline springs. Pop. 33,700.

**Berne Convention.** See under BERN.

**Berners, John Bouchier, 2nd Baron** (1467–1533), Eng. author and diplomatist; trans. *Froissart* (1523–5), *The Golden Book of Marcus Aurelius*, *The Book of Duke Huon of Bordeaux*, *Arthur of Little Britain*, etc. Style finely adapted to chivalric narrative; later, developed anti-thetic and ornate phraseology.

**Berners (or Barnes), Dame Juliana** (fl. first half of 15th cent.), author of the famous *Boke of St. Albans* (1486; facsimile pub. 1881), a treatise on hawking, hunting, and heraldry; said to have been prioress of Sopwell Nunnery, near St. Albans.

**Bernese Oberland**, highland district of Bern, Switzerland (46° 30' N., 7° 30' E.); occupied by Bernese Alps, which culminate in Finsteraarhorn, Jungfrau, and Aletschhorn; among chief passes are Jungfrauoch, Gemmi, Lauithor, Mönchjoch. Region includes summer resorts of Grindelwald, Interlaken, Meiringen, and great

glaciers of Ober- and Unter-Grindelwald.

**Bernhard, DUKE OF SAXE-WEIMAR** (1604–39), Ger. general in Thirty Years' War; youngest son of Duke Johann III.; assisted Gustavus Adolphus to win battle of Lützen for the Swedes; then won many battles for French against the emperor.

**Bernhardi, FRIEDRICH VON** (1849– ), Ger. writer on war, and soldier; served in Franco-German War (1870–1), and in Great War on Eastern front; best known by his books: *Germany and the Next War* (1912), in which he advocated the doctrine 'world power or downfall.' *How Germany makes War*, and *Britain as Germany's Vassal* were pub. in this country after the war had begun.

**Bernhardt, SARAH** (1845– ), Fr. actress; b. Paris; of Jewish descent; entered the Conservatoire at thirteen; début at the Comédie Française (1862); from 1880 her golden voice and dramatic power universally recognized; has exhibited paintings and sculptures in the Paris Salon.

**Berni, FRANCESCO** (1497–1535), Ital. poet; held clerical position in the Vatican, and later received canonry in cathedral at Florence; stands easily at head of Ital. comic poets; chiefly known for rewriting of Boiardo's *Orlando Innamorato*, a crude poem which he turned into a classic of its kind; verse known as *Bernesque*, of which most brilliant example in English is Byron's *Don Juan*.

**Bernicia**, northern kingdom of the Angles; extended from Forth to Tyne; said to have been founded by Ida in 6th

cent. Bernicia and Deira constituted Northumbria.

**Bernician Series**, Lower Carboniferous rocks in Northumberland; corresponds with 'Dinartien' of Fr. geologists.

**Bernina Alps.** See RHÆTIAN ALPS.

**Bernina Pass** (7,645 ft.), Swiss pass (46° 25' N., 10° 1' E.); connects Upper Engadine and Valtellina; hospice on summit.

**Bernina Piz**, loftiest summit (13,304 ft.) of Bernina Alps (46° 23' N., 9° 56' E.); first climbed in 1850. See RHÆTIAN ALPS.

**Bernini, GIOVANNI LORENZO** (1598–1680), Ital. artist; chiefly celebrated as architect and sculptor; designed Barberini Palace at Rome, and colonnade of St. Peter's; employed by Charles I. of England and by Louis XIV.

**Bernoulli, or BERNOULLI**, eminent family of Basel, Switzerland; refugees from Antwerp, remarkable for their hereditary scientific ability, especially in maths. (1) **JACQUES B.** (1654–1705) extended the use of the calculus and determined various curves; prof. and rector, Basel Univ. (2) **JEAN B.** (1667–1748), his brother, discovered exponential calculus and curve of swiftest descent; prof. in Groningen, afterwards succeeded (1) in Basel. (3) **NICOLAS B.** (1695–1726), eldest son of (2), prof. of maths. in Petrograd. (4) **DANIEL B.** (1700–82), son of (2), gained international recognition, sharing prize of Académie des Sciences, Paris, with Maclaurin and Euler; prof. of maths., Petrograd; prof. of experimental physics in Basel. (5) **JEAN B.** (1710–90), youngest son of (2),

succeeded his father in Basel. (6) **NICOLAS B.** (1687–1759), son of (3); met Halley and Newton in England; prof. of maths. in Padua; afterwards prof. of logic in Basel. (7) **JEAN B.** (1744–1807), grandson of (2) and son of (5), astronomer-royal at Berlin; afterwards mathematical director of the Akademie. (8) **JACQUES B.** (1759–89), brother of (7); travelled; succeeded (4) in chair of experimental physics in Basel; afterwards prof. of maths., Petrograd.

**Bernoulli's Numbers**, a sequence of numbers which occur in the expansion of certain useful functions, symbolized by the letters  $B_1, B_2, B_3$ , etc., up to 62nd and tabulated.

**Bernstein, EDUARD** (1850–), Ger. social democrat, politician; author of democratic literature; lived in London (1888–1901); member of Reichstag (1902–6).

**Bernstein, HENRI** (1876–), Fr. playwright who has attained great success, especially with *La Rafale* (1905) and *La Griffe* (1906).

**Bernstorff, ANDREAS PETER**, COUNT VON (1735–97), Dan. statesman; created count (1767); became minister after Struensee's fall; renewed friendship between England and Denmark; proposed new system of finance and abolition of serfdom, and allowed liberty to the press: started the development of Dan. manufactures and commerce.

**Bernstorff, CHRISTIAN GÜNTHER**, COUNT VON (1769–1833), Dan. and Prussian statesman; Dan. ambassador successively to Sweden, Austria, and Germany; made Prussian minister of foreign affairs (1818–32).

**Bernstorff, JOHANN**, COUNT VON (1862–), Ger. diplomatist; secretary to Ger. embassy, London (1902–6); Ger. ambassador at Washington, U.S. (1908–17); from outbreak of Great War the Ger. embassy in U.S. was centre of plotting against American establishments making munitions for Allies, he, as ambassador, conniving in attempts at bribery, incendiarism, etc. In 1920 he pub. *My Three Years in America*.

**Bernstorff, JOHANN HARTWIG ERNST**, COUNT VON (1712–72), one of the greatest of Dan. statesmen; called by Frederick the Great 'the Oracle of Denmark.' He emancipated the serfs, and under him trade flourished, hospitals were built, and Copenhagen became a literary centre.

**Beroea**. (1) Now VERRIA, anc. tn., Macedonia, s.w. of Pella; scene of St. Paul's preaching in A.D. 54. (2) Modern ALEPPO.

**Berrima**, township, New South Wales (34° 30' s., 150° 22' E.); copper, iron, coal, shale mines. Pop. (dist.) 10,000.

**Berruguete, ALONZO** (c. 1480–1561), Span. painter and architect; masterpiece, archbishop's stall in Toledo Cathedral, representing *The Transfiguration*, worked in marble.

**Berry**. See FRUIT.

**Berry, CHARLES ALBERT** (1852–99), Eng. congregationalist minister; president of Free Church Council and subsequently of Congregational Union.

**Berry, CHARLES FERDINAND**, DUC DE (1778–1820), second son of Charles X. of France; assassinated at the opera; memoirs written by Chateaubriand; his



wife, CAROLINE FERDINANDE LOUISE, DUCHESSE DE BERRY (1798-1870), suffered imprisonment (1832) for stirring up revolt against Louis Philippe in Vendée.

**Berry, SIR EDWARD** (1766-1831), Brit. admiral; Nelson's flag-captain at the Nile; commanded *Agamemnon* at Trafalgar.

**Berry, SIR GRAHAM** (1822-1904), Australian statesman; held various offices and was prime minister of Victoria (1875-80); agent-general for the colony in London (1886); speaker of Victoria Legislative Assembly (1894-7).

**Berry, RICHARD JAMES ARTHUR** (1867- ), prof. of anat. at Melbourne Univ., Australia (1905); founded first school of physical anthropology there; pub. several works on anat.

**Berryer, ANTOINE PIERRE** (1790-1868), French lawyer and politician; famous as orator in political prosecutions; strong Legitimist; a member of the Academy (1855).

**Berry Wax**, or MYRTLE WAX, fat obtained by boiling berries of various species of *Myrica* and skimming off substance that rises to top; chiefly used for soap-making.

**Bersaglieri**, light infantry of Italian army; raised in 1836; picked men, noted for speed, endurance, and marksmanship.

**Berseen**, or BERSIM, annual clover, peculiar to Egypt and Cyrenaica; flower heads pale yellow; used for fodder.

**Berserker**. (1) Name of twelve sons of Scandinavian hero, Berserk. (2) Any reckless Scandinavian warrior of Viking times.

**Bert, PAUL** (1833-86), Fr. scientist and anti-clericalist poli-

tician; wrote standard work on physiological effects of barometric pressure; was governor of Tongking (1886).

**Bertha**. (1) St. BERTHA (*d.* early 7th cent.), wife of Ethelbert of Kent; persuaded him to accept Christianity. (2) 'BERTHA AU GRAND PIED' (*d.* 783), wife of Pepin the Short and mother of Charles the Great; subject of early literature. (3) Sister of Charles the Great and mother of Roland in Arthurian romances. (4) Wife of Rudolf II. of Burgundy; subject of many anecdotes; *d. c.* 1000.

**Berthelot, PIERRE EUGÈNE MARCELLIN** (1827-1907), distinguished Fr. chemist and statesman, minister of foreign affairs (1895); wrote *Sur la Force de la Poudre et des Matières Explosives*.

**Berthier, LOUIS ALEXANDRE** (1753-1815), Prince of Neuchâtel, marshal of France; Napoleon's chief of staff (1796-1814); went over to the Bourbons (1814).

**Bertholet, ALFRED** (1868- ), Ger. theologian, prof. at Göttingen Univ.; wrote *The Transmigration of Souls, Buddhismus und Christentum*, etc.

**Berthollet, CLAUDE LOUIS, COUNT** (1748-1822), Fr. chemist, accompanied Napoleon to Egypt; was the first to analyse ammonia; discovered chlorate of potash.

**Berthon, EDWARD LYON** (1813-99), Eng. clergyman, invented two-bladed propeller and collapsible boats; used by General Gordon and by Selous.

**Berthoud**, Fr. name for Prussian town of BURGDORF.

**Bertie, FRANCIS LEVERTON, 1ST BARON BERTIE OF THAME** (1844-1919), Brit. ambassador to

Paris (1905); rendered great service in the growth of the Entente Cordiale.

**Bertillon**, LOUIS ADOLPHE ALPHONSE (1853-1914), Fr. criminologist, invented the 'Bertillon system' of measurement for identification of criminals. Also a handwriting expert; was called as a witness in the Dreyfus affair.

**Bertillon System** of anthropometry, system of classified measurements of criminals, including those of head, left foot, middle and little fingers of left hand; stature of whole body, also length of the upper and lower portions, span of outstretched arms, left ear, and left arm. System employed, for identification, in Paris since 1880. See FINGER-PRINTS.

**Bertin**, name of a family of Parisian journalists, of whom LOUIS FRANÇOIS (1766-1841) founded the *Journal des Débats*. LOUIS FRANÇOIS BERTIN DE VEAUX (1771-1842), his brother, was deputy and peer. EDOUARD and LOUIS MARIE ARMAND, sons of Bertin *ainé*, were also journalists of repute, and their sister was a painter and musician.

**Bertin**, LOUIS EMILE (1840- ), Fr. naval director of construction; was designer of the latest types of warships.

**Bertinoro**, tn., Italy (44° 4' N., 12° 12' E.); vineyards, mineral springs; stood numerous sieges in Middle Ages. Pop. 7,800.

**Bertram**, ADOLF (1859- ), prince-bishop of Breslau (1914); his appointment was considered to be due to his friendly relations with trade unionism.

**Bertrand**, GABRIEL (1867- ), prof. of biological chem. at the Sorbonne and the Pasteur Insti-

tute; discovered preventive vaccine for snake-bite.

**Bertrand**, LOUIS (1866- ), Fr. writer; his African novels, *Le Sang des Races*, *La Cina*, and *Pépète le Bien-Aimé*, are of a reactionary character; his *L'Invasion* was crowned by Fr. Academy.

**Bertrand**, LOUIS JACQUES NAPOLEON (1807-41), Fr. poet; wrote *Gaspard de la Nuit* and *Fantaisies à la Manière de Rembrandt et de Callot*.

**Beruni** (or BIRUNI), ABUR-RAIHAN MUHAMMAD AL- (973-1048), Arabian scholar; wrote famous *Chronology of Ancient Nations* (Eng. trans. 1879).

**Bervic**, CHARLES CLÉMENT BALVAY (1756-1822), Fr. engraver; famous for portrait of Louis XVI., also for the *Laocoon*.

**Bervie**, par., royal burgh, and port, Kincardineshire, Scotland (56° 51' N., 2° 17' W.); flax, woollens, chemicals. Pop. (par.) 2,300; (burgh) 1,100.

**Berwick**, NORTH. See NORTH BERWICK.

**Berwick**, JAMES FITZ-JAMES, DUKE OF (1670-1734), natural son of James II.; established his fame as a French soldier by winning, among many other victories, battle of Almanza (1707).

**Berwickshire**, co., S.E. Scotland (55° 46' N., 2° 26' W.); co. tn., Duns; fertile productive district, many varieties of soil; agriculture principal industry; sheep and cattle largely raised; important fisheries; manufactures include paper, woollens, linens, brewing, distilling, tanning. Tweed is most important river, for 21 m. outlining s. border; also watered by Leader, Whiteadder, and other affluents

of Tweed. Antiquities include remains of Roman and Pictish camps, stone circles, etc., and there are some monastic ruins. Co. returns one member. It was frequently overrun in wars between England and Scotland. Area, 457 sq. m.; pop. 29,600.

**Berwick-upon-Tweed**, walled mkt. tn. and seapt. on N. side of mouth of Tweed (55° 47' N., 2° W.); during Border wars frequently changed hands; in 1482 finally taken by English; for many years treated as independent co. separate from England and Scotland, but since 1885 included in Northumberland; remains of castle and fortifications; salmon and sea fisheries; coal and grain. Pop. 13,100 Scott, *History* (1888).

**Beryl** ( $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$ ), pale green gem stone, hexagonal, occurring in granitic rocks.

**Beryllium**, or GLUCINUM ( $\text{Be} = 9.1$ ), rare metallic element, isolated by Vauquelin (1798); sp. gr. 1.64. Its position in the periodic system of elements was much discussed.

**Beryllonite** ( $\text{NaBePO}_4$ ), complexly crystallized mineral discovered by F. S. Dana in granitic vein at Stoneham, Maine, U.S.

**Beryx**, genus of living perch-like fishes, allied to the Berycoid fishes of Cretaceous rocks.

**Berzelius**, JONS JAKOB (1779-1848), Swed. chemist, whose experiments in electrolysis resulted in his theory of chemical proportions and determination of atomic weights by an improved analytic method; discovered selenium, thorium, and cerium, and isolated silicon and other elements; pioneer of organic chem.

**Bes**, Egyptian divinity of foreign origin; the god of recreation in general, of art, music, dance, and childbirth in particular; protector of young children.

**Besançon**, fort. tn., dep. Doubs, France (47° 14' N., 6° 2' E.); well-preserved Roman remains; 11th cent. church; birthplace of Victor Hugo; watchmaking and silk manufactures. Pop. 58,000.

**Besant**, MRS. ANNIE, *née* Wood (1847- ), Eng. theosophist, lecturer, and author; associated with Charles Bradlaugh (1874-86) in his free thought campaigns; co-editor of *The National Reformer*; early member of the Fabian Soc., for which she wrote essays; became a theosophist in 1889, and in 1907 a prominent leader; spent much time in India, where she founded Central Hindu Coll., Benares (1898), and began the Home Rule for India League. Numerous works on theosophy, social and religious questions, including *Reincarnation*, *Religious Problem in India*, *Theosophy and the New Psychology*.

**Besant**, SIR WALTER (1836-1901), Eng. novelist, biographer, and antiquary; held professorship at Royal Coll., Mauritius (1861-67); secretary to Palestine Exploration Fund (1868-85); wrote many successful novels, at first in collaboration with James Rice—e.g., *Ready Money Mortiboy* and *The Golden Butterfly*. After Rice's death wrote *All Sorts and Conditions of Men* (which led to erection of People's Palace in E. end of London), *Dorothy Forster*, *Armored of Lyonesse*, etc., and several biographies and valuable topographical works on London

and Westminster. His *Autobiography* was pub. in 1902. Knighted in 1895.

**Beseler, HANS VON** (1850— ), Ger. general, specialist in siege operations; served in Franco-German War, and was appointed inspector-general of fortresses in 1894. He commanded the forces which besieged Antwerp (Sept. and Oct. 1914), and Novo Georgievsk (Aug. 1915). As gov.-gen. of Poland, he unsuccessfully attempted (1916) to carry out Ger. scheme for creating a Polish army to fight for Central Empire.

**Besika Bay**, on n.w. coast of Asia Minor (39° 58' N., 26° 11' E.), s. of entrance to Dardanelles; during attempt to force Dardanelles Turk. defences of the bay were shelled by battleship *Prince George* (March 1915).

**Beskid Mountains**, a range of the Carpathians (c. 49° 34' N., 19° 35' E.), now forming frontier between Czecho-Slovakia and Poland; crossed by Budapest and Breslau Ry. over Jablunka Pass, also by Munkacs and Lemberg Ry. over Beskid Pass. The passes of the Eastern Beskids were held and lost several times over by Russians (Oct. 1914–May 1915), but finally were evacuated as the result of a vigorous Ger. offensive.

**Beskow, BERNHARD VON, BARON** (1796–1868), Swed. poet and historian; was secretary of Swed. Academy; works include *Thorkel Knutsson*, *Erik XIV.*, and other dramatic poems, lyrical poems, memoir of Gustavus III., and miscellaneous works.

**Besnard, PAUL ALBERT** (1849— ), Fr. painter; portraits

marked by sincerity of expression, and decorative work by imagination; wife (Charlotte Dubray) is a sculptor of talent; painted, among others, *Madame Roger Jourdain*, *Madame Besnard*, etc., and several celebrated frescoes.

**Bessarabia**, prov., Rumania, formerly Russia (47° 20' N., 28° 20' E.), lying between the Dniester and the Pruth; n. occupied by spurs of Carpathians, but w. flat and fertile; higher ground covered with wood, in low ground attention is paid to cattle breeding, grain, tobacco, and vines; manufactures leather, soap, and candles; exports cattle, wool, timber, and grain; cap. Kishinev; portion between Pruth and Dniester added to Russia after war of 1877; became part of Rumania after Great War (1920). Area, 17,143 sq. m.; pop. 2,441,000.

**Bessbrook, tn., co. Armagh, Ireland** (54° 12' N., 6° 24' W.) flax spinning. Pop. 2,800.

**Bessel, FRIEDRICH WILHELM** (1784–1846), Ger. astronomer; introduced the heliometer and correction for personal equation (1823); invented *Bessel's Functions*, a mathematical relation between two variables, of importance in mathematical physics.

**Bessemer, city, Alabama, U.S.** (33° 27' N., 86° 57' W.); blast furnaces, foundries, rolling and planing mills. Pop. 10,900.

**Bessemer, SIR HENRY** (1813–98), Eng. engineer and inventor; famous for his steel-manufacturing process. (See STEEL.) His hydraulic appliance to counteract effects of a rolling ship was unsuccessful when tested (1875–6).

**Bessemer Process.** See under STEEL.

**Bessières, JEAN BAPTISTE** (1768-1813), Duke of Istria (1809), marshal of France (1804); one of most distinguished cavalry officers in Napoleonic wars; said to have secured day at Marengo; colonel-general of the Consular Guard (1805-7); won battle of Medina del Rio Seco (1808); commanded Imperial Guard in retreat from Moscow.

**Bessonov, PETER ALEXEIVITCH** (1828-98), Russian philologist; prof. of Slavonic literature, Cracow; pub. important books on language and literature of Rumania and Bulgaria, and also a critical collection of their folk-lore and popular songs.

**Bessus**, satrap of Bactria, had a share in the assassination of Darius III. after battle of Arbela (331 B.C.); afterwards captured and put to death by Alexander.

**Best, GEORGE** (d. 1584?), Eng. navigator, accompanied Martin Frobisher on three voyages; wrote *A True Discourse of the Late Voyages of Discovery*.

**Best, WILLIAM THOMAS** (1826-1897), Eng. organist, revolutionized the musical life of Liverpool by his unrivalled recitals, especially of Bach's works.

**Bestiary**, popular class of mediæval books containing descriptions of animals, which are afterwards treated as allegorical types of the spiritual life.

**Betaine, OXYNEURINE**, or **LYCINE** ( $C_5H_{13}NO_3$ ), methyl hydroxide of dimethyl glycocoll, occurring in sugar beet, vetch, cotton seed, and wheat.

**Betelgeux**, a red star, fluctuating in magnitude from 0.2 to 1.0; forms huge equilateral triangle with Procyon and Sirius.

**Betel Leaf**, or **BETEL PEPPER**, is *Piper betle*, belonging to Piperaceæ; plant, betel vine, is cultivated in India and E. Indies; proffered as sign of honour and hospitality in India.

**Betel-nut Palm**, or **PINANG** (*Areca catechu*), is cultivated throughout tropical Asia; seed extensively used by the inhabitants for chewing.

**Betham - Edwards, MATILDA BARBARA** (1836-1919), Eng. novelist and writer on Fr. life; chief novels: *Doctor Jacob*, *Bridget*, *A Storm-rent Sky*, *Hearts of Alsace*, etc.; other works, *Poems*, *France of To-day*, *French Men*, *Women*, and *Books*, etc.

**Bethany**. (1) Vil., Palestine ( $31^{\circ} 46' N.$ ,  $35^{\circ} 17' E.$ ), foot of Mount of Olives; mentioned in N.T. as home of Martha, Mary, and Lazarus. (2) Tn., Natal ( $28^{\circ} 35' S.$ ,  $29^{\circ} 33' E.$ ), near Spion Kop; scene of battle during S. African War (1900). (3) Vil. and prov., Orange Free State ( $29^{\circ} 32' S.$ ,  $25^{\circ} 58' E.$ ).

**Bethel**. (1) An ancient sanctuary of Israel (probably modern Beitin, 12 m. N. of Jerusalem); mentioned in O.T. in connection with Abraham, Jacob, and as resting-place of Ark; scene of Jeroboam's institution of idolatrous worship of golden calf. (2) Common name in Wales for a Nonconformist chapel.

**Bethesda**. (1) Sacred spring in Jerusalem where remarkable cures were said to be performed (John 5:2). (2) Tn., Carnarvonshire, Wales ( $53^{\circ} 12' N.$ ,  $4^{\circ} 3' W.$ ), 4 m. S.E. of Bangor; slate quarries. Pop. 5,000.

**Beth-horon**, two neighbouring villages of Palestine ( $31^{\circ} 53' N.$ ,

35° 6' E.); scene of victories of Joshua and Judas Maccabæus.

**Bethlehem.** (1) Vil. (modern Beit-Lahm), Palestine (31° 42' N., 35° 12' E.); birthplace of David and afterwards of Christ (Matt. 2: 1-6); church of the Nativity—probably the oldest Christian church in the world; was occupied by British troops during converging attack on Jerusalem (Dec. 1917). (2) Bor., Pennsylvania, U.S. (40° 36' N., 75° 22' W.); Moravian institutions; iron and steel works, silk mills. Pop. 12,800. (3) Tn., New Hampshire, U.S. (44° 16' N., 71° 37' W.); health resort of White Mt. region. Pop. 1,200.

**Bethlehemites**, name assumed at different periods by three separate orders of the R.C. Church: (1) by a body of Cambridge Friars (1257), wearing a habit like Dominicans, with addition of a star, in allusion to Matthew 11: 9; (2) by an order of knighthood established (1459) by Pius II. as a bulwark against the Turks; (3) by a Guatemalan community founded (1650) by Pedro Betancourt, who wore the dress of Capuchins. The name was also applied to followers of John Huss, from the name of his church at Prague.

**Bethmann - Hollweg**, THEOBALD VON (1856-1921), German statesman, born at Hohen-Finow, Mark of Brandenburg, educated at Bonn Univ., where he became a friend of the ex-Kaiser; entered civil service, and was Prussian home secretary (1905), vice-chancellor of Prussian ministry (1907), and imperial chancellor (1909-17). He has been called 'the incarnation of the passionate

doctrinarianism which appealed to the heart of William II.' Shortly after the outbreak of the Great War he admitted German criminality in the invasion of Belgium, which he defended on the ground that 'necessity knows no law.' He told the Brit. ambassador (Sir Edward Goschen) that the treaty which was thought to guarantee Belgium's neutrality was just 'a scrap of paper.' In the summer of 1915 acute differences arose between him and Admiral von Tirpitz regarding the submarine 'blockade,' which finally resulted in the latter's resignation. Controversy, however, was not stilled, Bethmann-Hollweg being suspected of showing undue deference to the U.S., and generally restraining the military leaders. He declined to define Germany's war aims, and in July 1917 a crisis arose in the Reichstag which led to his dismissal by the Kaiser at the instigation of the military party. He published (1919) a volume of *Memoirs*, giving his version of the events which led to the war, and a defence of his policy.

**Bethnal Green**, eastern metropolitan and parl. bor., London; headquarters of costermongers; museum. Pop. 128,400.

**Bethphage**, vil. near Bethany, on Mt. Olivet; present site unknown; only mentioned in account of triumphal entry into Jerusalem (Matt. 21: 1, etc.).

**Bethsaida.** (1) Tn., Palestine (32° 54' N., 35° 37' E.), E. of riv. Jordan; scene of two of Christ's miracles. (2) Tn., W. of Jordan (32° 52' N., 35° 33' E.), birthplace of Philip, Andrew, and Peter (Mark 6: 45).

**Bethshemesh.** (1) City of Judah, Palestine—now ruined vil. of Ain Shems (31° 45' N., 34° 58' E.). (2) Temple of On (Heliopolis), Egypt (30° 8' N., 31° 19' E.); pillars of Bethshemesh mentioned by Jeremiah (43:13) are obelisks connected with worship of Ra, the sun-god.

**Bethulie**, dist. and tn., Orange Free State, S. Africa (30° 29' S., 25° 59' E.); wheat, fruit, cattle, etc. Pop. (tn.) 1,670.

**Béthune**, tn., dep. Pas-de-Calais, France (50° 30' N., 2° 35' E.), 20 m. w.s.w. of Lille, in the centre of a rich coalfield; connected with La Bassée and Lille by canal, which during the Great War was the junction between the Brit. and Fr. forces from Oct. 1914 till the latter half of 1915; became an important point in the Brit. communications. In battle of the Lys (April 1918) the Germans advanced to within 3 m. of Béthune (April 12), when centre of town suffered very heavy damage from the enemy's long-distance artillery.

**Betony**, mint-like herb (*Stachys betonica*); order Labiatae; reddish-purple flowers; perennial.

**Bettelheim**, ANTON (1851–), Austrian man of letters, distinguished as biographer and literary critic. Chief works: *Lives of Anzengruber* (1891) and *Marie von Ebner-Eschenbach* (1900); *Deutsche und Franzosen* (1895), and *Acta Diurna* (1899).

**Betterment**, legal term, mostly used in America, for appreciation in value of lands and tenements; when it accrues from causes not dependent on the efforts of the owner—e.g., growth of neighbouring towns, municipal

enterprise, etc.—it is known as the 'unearned increment.' See LAND VALUES.

**Betterton**, THOMAS (c. 1635–1710), Eng. actor and dramatist; said to have introduced movable scenery into England. His wife, Mary Saunderson, was a noted actress. He was buried in Westminster Abbey.

**Bettia**, tn. and sub-division, Bengal, India (26° 48' N., 84° 30' E.); indigo. Pop. 25,800.

**Betting**, the staking of money on horse-races or other forms of sport. Betting is legally permitted, under certain conditions; on racecourses, and at athletic sports, is an offence only if the promoters exhibit a notice at the entrance prohibiting betting within. By the Street Betting Act of 1906, 'any person frequenting or loitering in streets or public places, on behalf either of himself or of any other person, for the purpose of bookmaking, or wagering, or agreeing to bet or wager, or paying, or receiving, or settling bets,' is liable to a fine. Further, by the Licensing Act of 1872 any licensed person permitting betting on his premises is liable to a fine.

The Betting Act of 1853, extended to Scotland in 1874, makes it a specific offence to publish advertisements, handbills, placards, etc., showing that any house is kept or opened for the purpose of betting. Under a penalty of £30 and costs, or two months' imprisonment, the sending or publishing is prohibited of any letter, telegram, or advertisement, offering information or advice as to any bet or wager relating to a horse-race, or any

other sport. By the Betting and Loans (Infants) Act (1892), the sending of any such letter or advertisement to an 'infant' (under 21 years) is made a misdemeanour, to which imprisonment and heavy fines are attached. Betting is not *per se* illegal, but by the Gambling Act (1845) all betting or wagering contracts, whether by word or writ, are null and void.

Betting used to be confined largely to the wealthy classes and to horse-racing, but to-day it is widely diffused, and other sports, such as football, foot-racing, whippet-racing, rabbit-coursing, and pigeon-flying, are also used as media. In horse-racing there is generally more profit for the bookmaker when an outsider wins than when a favourite is successful. Post betting, as the name implies, takes place on the scene of action, and begins when the numbers of the starters have been displayed; but as most people are unable to attend race meetings the system of 'starting price' or 's.p.' betting has become most popular, largely replacing the 'ante-post' method of wagering before the day of the race. In 's.p.' betting the layer contracts to lay the exact price as quoted in the *Sportsman* newspaper, the backer, as a matter of course, getting a run for his money. The *pari-mutuel*, or 'mutual bets' system, where those who have placed a stake on the winning horse share the stakes on the other horses after a percentage has been retained for the race fund and the poor, is general in France; in Australia

and India, where the system is called the 'Totalizator,' the race fund gets it all.

**Bettws-y-Coed**, urban dist., Carnarvonshire, Wales (53° 7' N., 3° 48' W.); artist and tourist resort. Pop. 1,000.

**Betty**, WILLIAM HENRY WEST (1791–1874), well known as 'young Roscius,' or the boy actor, whose fame was so great that Pitt adjourned the House to allow members to see his Hamlet; retired (1812) with large fortune.

**Betul**, tn. and dist., Central Provinces, India (21° 22'–22° 23' N., 77° 11'–78° 34' E.); plateau surrounded by belt of hilly forest country; Tapti flows through s. portion; inhabitants are Gonds; cotton, teak. Area, 3,826 sq. m.; pop., dist. 285,400; tn. 4,700.

**Betulaceæ**, family of shrubs and trees; leaves alternate, undivided, stipulate; found in N. temperate regions—*e.g.*, birch, hazel, alder, hornbeam.

**Betwa**, riv., Bhopal, Brit. India (24° 30' N., 78° 20' E.); trib. of Jumna; length, 400 m.

**Beulé**, CHARLES ERNEST (1826–74), Fr. archaeologist and politician, discovered the propylæa of the Acropolis at Athens; was minister of the interior in 1873.

**Beust**, FRIEDRICH FERDINAND, COUNT VON (1809–86), Austrian statesman, and chancellor of the Austrian Empire; he secured the emperor's coronation as King of Hungary. He removed religious disabilities, and organized national defence; resigned 1871; subsequently ambassador to Britain and France (1878).

**Beuthen**, tn., Silesia (Plebiscite Area) (50° 22' N., 18° 56' E.); coal, iron, zinc. Pop. 67,700.



**Beveland**, two islands, Zeeland, Holland ( $51^{\circ} 35' \text{ N.}, 3^{\circ} 47' \text{ E.}$ ); S. Beveland is bisected by canal and connected with mainland and Walcheren by ry. embankments. Aggregate area, 120 sq. m.

**Beveren**, tn., E. Flanders, Belgium ( $51^{\circ} 13' \text{ N.}, 4^{\circ} 15' \text{ E.}$ ); lace. Pop. 10,900.

**Beveridge**, ALBERT JEREMIAH (1862– ), U.S. senator; visited Germany during the Great War, and was interviewed by von Tirpitz, who defended Germany's submarine policy.

**Beverley**, mrkt. tn., near riv. Hull, E. Riding, Yorkshire ( $53^{\circ} 51' \text{ N.}, 0^{\circ} 26' \text{ W.}$ ); St. John's Church (the minster), excellent example of Gothic arch.; contains the Percy shrine; seat of suffragan bishop; leather, agricultural implements; builds steam trawlers; bombed by zeppelins during Great War. Pop. 13,700.

**Beverly**, seapt., Massachusetts Bay, U.S. ( $42^{\circ} 33' \text{ N.}, 70^{\circ} 51' \text{ W.}$ ); boots and shoes; machinery; fisheries. Pop. 18,700.

**Bevis of HAMPTON**, Eng. 13th cent. metrical romance, showing strong Fr. influence. Bevis was son of Guy, Count of Hampton, who was murdered at his wife's instigation, the son being eventually sold into slavery. In the East he became enamoured of a princess, named Josien, whom he eventually married. The romance is chiefly occupied with the account of his wonderful exploits. It has been pub. by the Abbotsford Club (1838) and Early Eng. Text Soc. (1885).

**Bewcastle**, vil., Cumberland, England ( $55^{\circ} 4' \text{ N.}, 2^{\circ} 38' \text{ W.}$ ); runic cross, 14 ft. high (7th cent.), in churchyard.

**Bewdley**, mrkt. tn., Worcestershire, England ( $52^{\circ} 22' \text{ N.}, 2^{\circ} 20' \text{ W.}$ ); horn goods. Pop. 2,700.

**Bewick**, THOMAS (1753–1828), Eng. wood engraver, whose famous woodcuts are prized by collectors. His *British Birds* (1809) is especially esteemed.

**Bexhill**, munic. bor., Sussex, England ( $50^{\circ} 50' \text{ N.}, 0^{\circ} 28' \text{ E.}$ ), a popular wat.-pl., with *kurssaal* of Continental type. Pop. 15,300.

**Bexley**, tn. and par., Kent, England ( $51^{\circ} 27' \text{ N.}, 0^{\circ} 9' \text{ E.}$ ); reputed birthplace of Black Prince. Pop. 15,900.

**Bexley**, NICHOLAS VANSITTART, BARON (1766–1851), Eng. politician; chancellor of exchequer (1812–23); cr. baron (1823); chancellor of Duchy of Lancaster and cabinet minister (1823–8).

**Bey**. (1) Hereditary ruler of Tunis; (2) Turk. grandee.

**Beyers**, CHRISTIAN FREDERICK (1869–1914), S. African general; proved himself to be one of ablest strategists among Boer commanders; was chairman of Vereeniging Peace Conference. Later was speaker of Transvaal Republic, but did not obtain similar position in S. African Parliament. Appointed commandant-general of Active Citizen Force on passing of Defence Act (1912), he resigned Sept. 1914. Was one of chief plotters of S. African rebellion, raising standard of revolt in W. Transvaal (Oct. 27). Defeated by Botha near Rustenburg, he fled s.w., and entered Orange Free State. Was shot while crossing Vaal R. (Dec. 7). See SOUTH AFRICA, *Rebellion in*.

**Beyrich**, HEINRICH ERNST (1815–96), Ger. geologist and palæontologist. Geological chart

of Germany due in great part to his labours. Works include *Ueber einige Cephalopoden aus dem Muschelkalk der Alpen* (1867).

**Beyrout.** See BEIRUT.

**Beza, THEODORE** (1519-1605), Genevan reformer and theologian; succeeded Calvin (1564); wrote many religious works, including most of Huguenot Psalter (1562); revised Huguenot Bible; trans. N.T. into Latin (1556); presented uncial N.T. in ms. (*Codex Bezae*) to Cambridge Univ.

**Bezant.** (1) Gold piece in use during Byzantine Empire, value about ten shillings; was financial unit between East and West till replaced by Venetian ducat. Also silver coin about size and value of florin; in 14th cent. coin of this value known as 'white bezant' was used in England. (2) A heraldic figure, represented by gold circle, introduced by Crusaders.

**Bezborodko, ALEXANDER ANDREEVITCH, PRINCE** (1747-99), grand chancellor of Russia; became adviser of Catherine II. and guided Russian affairs. The advantageous terms of peace made with Gustavus III. (1790) and the Turks (1792) were due to him, as was also the third partition of Poland. He retained entire control after death of Catherine, becoming chancellor.

**Béziers, tn., dep. Hérault, France** (43° 20' N., 3° 14' E.); Roman remains; fine Gothic cathedral; scene of Albigenian massacre (1209); red wines, brandy. Pop. 52,000.

**Bézique**, popular counting and combination card game, usually played by two persons, though sometimes by three or four; played with double pack.

**Bezoar** (from Pers. *padzahr*, 'an antidote to poison'), a ball found in stomach and intestines of ruminants, formed by concretion of salts, etc., round particle of foreign matter; once supposed to have medicinal uses.

**Bezold, CARL** (1859- ), Ger. Orientalist; for a time was employed at Brit. Museum; prof. of Oriental philology and director of Oriental Institute, Heidelberg (1894); author of many books on Oriental subjects.

**Bezold, WILHELM VON** (1837-1907), Ger. meteorologist; prof. of meteorology, Berlin, and director of Meteorological Institute; he established thirty-four meteorological centres in Bavaria; author of many valuable books on the subject.

**Bezwada, tn., Kistna dist., Madras, India** (16° 31' N., 80° 37' E.); important road, rail, and canal meeting-place. Pop. 25,000.

**Bhagalpur.** (1) Div. of Bengal, India. Area, 19,776 sq. m.; pop. 8,145,000. (2) Central dist. in above; rice, maize, wheat, oil-seeds, cotton, jute, rhea, and indigo. Area, 4,226 sq. m.; pop. 2,139,300. (3) Chief tn. of above dist. (25° 15' N., 87° E.); Mohammedan shrines and interesting Jain temples; agricultural produce. Pop. 74,300.

**Bhagavad Gita** ('The Song of the Holy One'), one of sacred books of Hinduism; it centres round Krishna; written in Sanskrit between 500-400 B.C.

**Bhamo.** (1) District, Upper Burma. Area, 4,416 sq. m.; pop. c. 80,000; rich teak forests. (2) Chief tn. of above dist. (24° 15' N., 97° 15' E.); highest point of Irawadi navigation. Pop. 9,000.

**Bhandara.** (1) Dist., Nagpur div., Central Provinces, India; rice, wheat, oil-seeds, bamboo, and manganese are exported. Area, 3,965 sq. m.; pop. 773,600. (2) Chief tn. of above dist. (21° 10' N., 79° 40' E.); brass working industry. Pop. 7,400.

**Bhang,** BANG, or BANGUE, Ind. term for hemp plant (*Canabis sativa*); desiccated and otherwise prepared leaves are used as narcotic and intoxicant.

**Bhartpur,** or BHARATPUR. (1) Feudatory state, Rajputana, India; cotton cloth, iron utensils, glass; in Sept. 1914 maharajah placed at disposal of Brit. Government all resources of the state. Area, 1,982 sq. m.; pop. 558,800. (2) Cap. of above state (27° 13' N., 77° 30' E.); fly-whisks, fans, etc. Pop. 50,400.

**Bhartrihari,** Ind. poet, according to legend brother of King Vikramaditya (1st cent. B.C.); reputed author of *Three Centuries (Satakas) of Sanskrit Apophlegms*; several Eng. translations.

**Bhatgaon,** tn., Nepaul, India (27° 42' N., 85° 26' E.); garrison town; Brahmin resort. Pop. c. 30,000.

**Bhau Daji** (1822-74), Hindu physician, educationist, and anti-quarian; practised med. with great success in Bombay; author of many papers on Sanskrit and Indian antiquities; discovered formulæ for certain Sanskrit medicinal preparations of great use in treatment of leprosy.

**Bhaunagar.** (1) Native state, Bombay, India; grain, cotton, salt. Area, 2,860 sq. m.; pop. 441,360. (2) Chief tn. and port of above (21° 45' N., 72° 12' E.); exports cotton. Pop. 60,700.

**Bhavabhuti** (c. A.D. 700), Ind. dramatist, whose works (7th and 8th cents.) are among greatest Sanskrit productions; three of his plays, two of them on the subject of Rama, are extant.

**Bhera,** tn., Punjab, India (32° 28' N., 72° 56' E.), 80 m. s. of Rawal Pindi; jade work and wood carving. Pop. c. 19,000.

**Bhils,** or BHEELS, a Dravidian tribe of the Vindhya range, Central India, who lead nomad life; dark, sturdy hunters; low civilization; number c. 1½ millions.

**Bhilsa.** (1) District, Gwalior state, Central India; wheat, tobacco. Area, 1,625 sq. m.; pop. 180,400. (2) Chief tn. of above (23° 31' N., 77° 49' E.); Buddhist tumuli. Pop. 8,400.

**Bhir.** (1) Dist., Haidarabad, India; wheat, cotton, linseed, sugar. Area, 4,460 sq. m.; pop. 400,000. (2) Chief tn. of above (18° 59' N., 75° 46' E.); leather water-bottles. Pop. 16,000.

**Bhiwandi,** tn., Thana dist., Bombay Presidency, India (19° 18' N., 73° 3' E.); weaving and rice cleaning. Pop. c. 13,300.

**Bhiwani,** tn., Hissar dist., Punjab, India (28° 48' N., 76° 8' E.); wheat, flour, cotton goods, sugar, etc. Pop. 36,500.

**Bhopal.** (1) Agency comprising thirty-one native states, Central India. Area, 11,653 sq. m.; pop. 1,050,400. (2) Largest feudatory state in above agency; next to Haidarabad, most important Mohammedan state in India; supported British during Mutiny, and showed great loyalty in the Great War. Area, 6,902 sq. m.; pop. 730,400. (3) City, cap. of above state (23° 14' N., 77° 20' E.); weaving and printing

of cotton cloth, jewellery. Pop. 56,200.

**Bhopawar**, political charge under Central India Agency (c.  $22^{\circ} 35' \text{ N.}$ ,  $75^{\circ} 1' \text{ E.}$ ), including twenty-six states and portions of other states. Area, 7,684 sq. m.; pop. 698,400.

**Bhor**. (1) Feudatory state, Bombay Presidency, India; rice and nāgli. Area, 925 sq. m.; pop. 144,600. (2) Chief tn. of above ( $18^{\circ} 9' \text{ N.}$ ,  $75^{\circ} 53' \text{ E.}$ ), 30 m. s. of Poona. Pop. 4,200.

**Bhownagree**, SIR MANCHERJEE MERWANJEE (1851– ), Parsee journalist and politician; state agent, Bhaunagar (1873); called to Eng. bar (1885); helped to establish constitutional administration in Bhaunagar; Conservative M.P. for Bethnal Green (1895–1906); knighted in 1897; wrote *History of the Constitution of the East India Company*, etc.

**Bhuj**, cap. of feudatory state of Cutch, Bombay Presidency, India ( $23^{\circ} 15' \text{ N.}$ ,  $69^{\circ} 48' \text{ E.}$ ); has many interesting archæological remains. Pop. c. 27,000.

**Bhusawal**, tn., Bombay Presidency, India ( $21^{\circ} 3' \text{ N.}$ ,  $75^{\circ} 47' \text{ E.}$ ); ginning factories and cotton press. Pop. c. 16,000.

**Bhutan**, protected state, E. Himalayas ( $26^{\circ} 41' - 28^{\circ} 7' \text{ N.}$ ,  $88^{\circ} 54' - 91^{\circ} 54' \text{ E.}$ ); bounded N. and E. by Tibet, S. by Brit. India, W. by Sikkim and Chumbi Valley. Area, c. 20,000 sq. m. Surface is mountainous; watered by various tribs. of Brahmaputra. Climate varies according to elevation. Bhutan produces rice, corn, millet; manufactures textiles. Inhabitants are chiefly Bhutias, racially allied to Tibetans. Religion is Buddhism, intermingled

with devil worship and animal sacrifice. Chief towns, Punakha (cap.) and Tasichozong. Bhutan is administered by two supreme authorities, Dharm Raja and Deb Raja, respectively spiritual and secular rulers, but the latter, with title of maharajah, is now supreme. Part called the Dwar was annexed to Britain (1865). Pop. c. 250,000.

**Bhuvaneswar**, temple city of Siva, Bengal Presidency, India ( $20^{\circ} 15' \text{ N.}$ ,  $85^{\circ} 50' \text{ E.}$ ); supposed cap. of Lion dynasty of Orissa (A.D. 500–1104).

**Biafra**, BIGHT OF, a large and deep indentation on W. coast of Africa, crossed about middle by  $3^{\circ} \text{ N.}$ ,  $8^{\circ} \text{ E.}$ ; between mouth of Niger and Cape Lopez (400 m.).

**Biagi**, GUIDO (1855– ), Ital. librarian and bibliographer, inspector-general of public education (1893–5), and principal librarian of Laurentian Library, Florence (1895); works include a *Life* of Benvenuto Cellini, etc.

**Biala**. (1) Riv., Poland ( $49^{\circ} 26' \text{ N.}$ ,  $20^{\circ} 15' \text{ E.}$ ), reached by Russians in conquest of Galicia (Dec. 1914); here Austrians and Russians faced one another, until Mackensen launched his great artillery assault. See WAR, THE GREAT. (2) Or BIALLA, vil., Poland ( $53^{\circ} 37' \text{ N.}$ ,  $22^{\circ} 5' \text{ E.}$ ), in Masurian Lake region, occupied by Russians in course of first invasion of E. Prussia (Oct. 1914).

**Bialystok**, tn. and prov., Grodno, Russia ( $53^{\circ} 6' \text{ N.}$ ,  $23^{\circ} 18' \text{ E.}$ ); town captured by Ger. troops (Aug. 1915). Pop. c. 60,000.

**Biancavilla**, tn., Sicily ( $37^{\circ} 39' \text{ N.}$ ,  $14^{\circ} 52' \text{ E.}$ ); colonized by Albanians (1480). Pop. 13,000.

**Bianchini**, FRANCESCO (1662–1729), Ital. astronomer; libra-

rian to Pope Alexander VIII.; discoverer of three comets.

**Biard**, FRANÇOIS (1798–1882), Fr. painter and traveller; excelled in depicting comic and burlesque situations.

**Biarritz**, fashionable winter and summer seaside resort (43° 29' N., 1° 33' W.), dep. Basses-Pyrénées, France. Pop. 13,600.

**Bias** (c. 550 B.C.), one of the Seven Sages of Greece, famous for nobility of character and wisdom of counsels; many of his pithy sayings are in Mullach's *Fragmenta Philosophorum Græcorum*.

**Bibirine**, or **BEBBERINE** (C<sub>15</sub>H<sub>21</sub>NO<sub>3</sub>), alkaloid produced from *Nectandra rodicei*, a S. Amer. tree; occasionally medicinally used in fever cases.

**Bible**, **THE** (Gr. *ta Biblia*, 'the books'), name given to collection of writings accepted by Christians as divinely inspired, and containing the record of God's revelation of Himself. There has been considerable dispute as to inclusion of some of books of Apocrypha in the canon. The Bible consists of two great parts, the Old and New Covenants, or, as the translators of the old Latin version preferred to call them, Testaments (Lat. *testamentum*). The **OLD TESTAMENT** consists of (1) The Pentateuch, or five books of the Law; (2) The Prophets; and (3) The Hagiographa (writings concerning holy men), viz. Psalms, Proverbs, Job, The Song of Songs, Ruth, Lamentations, and other books not included under the Law or the Prophets. The **NEW TESTAMENT**, written in Greek, consists of the Four Gospels, the Acts of the Apostles, the Epistles, and the Revelation of

St. John. The O.T., most of which was written in Hebrew, was trans. into Greek at Alexandria about 270 B.C. by 70 translators; their version is known as the **SEPTUAGINT**. Both Old and New Testaments were trans. into Latin by St. Jerome (385–404), and the entire volume is known as the **VULGATE**. No ms. of the O.T. in the original Hebrew, except a small fragment belonging to the 1st or 2nd cent. A.D., dates from before the 9th cent.; and none of the N.T., in the Greek, except a small fragment dating from the 3rd cent., is earlier than the 4th cent., but commentators are generally agreed that the 1st cent. text has come down to us practically intact. A printed text of the O.T. Psalter was issued by Jews in Italy in 1475; the first complete Lat. Bible was printed at Soncino (1488).

*The English Bible*.—The earliest attempt to write any portion of the Scriptures in the Eng. vernacular of which we have any record is attributed to Cædmon (d. 680), who was a monk of Whitby Abbey, and paraphrased certain portions of the Bible. He was followed by the 'Venerable' Bede (d. 735) of Jarrow, author of the *Eccles. Hist. of England*, who trans. a portion of the Gospel of St. John, while Ælfric, Abbot of Eynsham (955–1022), trans. the Pentateuch, Joshua, Judges, Kings, Job, Esther, Judith, and the Maccabees. The first complete trans. of the Vulgate into English was made by WYCLIF about 1382, and this version was revised by John Purvey in 1388. With the introduction of printing in England (1477), and the wider

diffusion of knowledge of the anc. languages, it became possible to work upon a broader textual basis. Renaissance scholars went back to the Gr. N.T. instead of relying on mediæval Lat. versions. This is especially notable in the N.T. of WILLIAM TYNDALE (pub. at Worms, 1525), and in the Pentateuch and other portions of the Scriptures trans. by him. The first complete Eng. Bible was that by MILES COVERDALE, afterwards Bishop of Exeter, in 1535, which was founded on the Zurich Ger. version, and also on Tyndale's and other versions. It is noteworthy that Coverdale was the first editor to take the non-canonical books from the body of the O.T. and place them at the end under the title of *Apocrypha*. In 1537 appeared a version known as 'Matthew's Bible,' which bore on the title-page the name of John Matthew, though the text is taken wholly from Tyndale and Coverdale. In 1539 was pub. 'the Great Bible,' a version of Matthew's Bible, undertaken at the instance of Cromwell, Earl of Essex. Several other versions followed, which differed only in minor particulars, and in 1604 James I. resolved to have a new trans. prepared; it was completed in 1611, and has continued to be the Authorized Version of the Eng. Bible down to modern times. The modern Revised Version, undertaken at the suggestion of the Convocation of the clergy, was commenced in 1870; the N.T. appeared in 1881, the O.T. in 1885, and the *Apocrypha* in 1895. The *American Standard Revised Bible*, pub. in 1901 by

Thomas Nelson and Sons, is the latest revision of the Bible in English. It incorporates the emendations of the Amer. revisers who collaborated in the Revised Version issued in 1881, together with additional revisions.

J. Eadie, *The English Bible* (2 vols. 1876); A. Edgar, *The Bibles of England* (1889); F. G. Kenyon, *Our Bible and the Ancient Manuscripts* (1895); *Aids to the Bible Student* (new ed. 1916).

**Bible Christians**, or **BRYANITES**, originated in Cornwall in 1815. Founded by a local preacher named William O'Bryan in 1907, the sect had over 32,500 members when it coalesced with the United Methodist Church.

**Bible Societies** are societies formed to circulate the Bible. The earliest in point of date is the Society for Promoting Christian Knowledge (S.P.C.K.), founded in 1698, which has pub. versions of the Scriptures in 38 different languages; others are the Canstein Bible Institute, founded by Baron von Canstein at Halle (1710); the Bible Soc. (1780), later known as the Naval and Military Bible Soc.; the Fr. Bible Soc. (1792); the Religious Tract Soc. (1799), which carries on important home and foreign missionary work; the Brit. and Foreign Bible Soc. (1804); the National Bible Soc. of Scotland; and the Hibernian Bible Soc. First Amer. Soc. at Philadelphia (1808); Amer. Bible Soc. (1816) pub. Bible in 100 tongues, including Arabic, Chin. dialects, and Amer. Indian.

**Biblia Pauperum**, or **POOR MEN'S BIBLE**, term used by Heinecken in 18th cent. to de-

scribe mss. and printed books containing wood-block illustrations of events in Bible story.

**Bibliography** (older form, 'bibliology'), formerly meant the writing or transcription of books; but for nearly a cent. now the word has come to mean expert writing on books and mss. both as regards form and matter; the first deals with points of variation between different editions, questions of authorship, binding, type, etc.; the second enumerates books relating to some special subject, author, period, or country; many bibliographies of bibliographies have been pub.

**Bibliomancy**, method of divination performed by a haphazard opening of the Bible and drawing an omen from the first passage which strikes the eye.

**Bibliothèque Nationale**, the Fr. national depository for books, mss., prints, coins, etc.; one of the greatest libraries of the world; contains over 3,500,000 vols.

**Bicarbonate**, or **ACID CARBONATE**. See **CARBONATES**.

**Bice**, a pigment of which there are two colours—blue, obtained from blue carbonate of copper; and green, from blue bice with addition of yellow orpiment.

**Biceps** ('two-headed'), muscle in front of upper arm which flexes the elbow, and has two separate attachments above.

**Bicester**, urban dist., Oxford, England (51° 53' N., 1° 9' W.), lace, sacking; cattle fairs. The Bicester and Warden Hill Hunt dates from 1800. Pop. 3,800.

**Bichat**, **MARIE FRANÇOIS XAVIER** (1771–1802), Fr. anatomist and physiologist; studied under Desault; his *Anatomie*

*Générale* created a revolution in methods of anatomical and physiological research.

**Bichel**, **C. E.**, one of the leading Ger. authorities on explosives. Since 1885 his inventions and investigations, alone and in collaboration, have been numerous. Special investigations were: the sensitiveness of certain explosives when tested by falling weights; flame measurements; power and violence of explosions.

**Bichir**. See **POLYPTERUS**.

**Bichromates**. See **CHROMIC ACID**.

**Bickerdyke**, **JOHN**, pseudonym of Charles Henry Cook (1858– ), Eng. novelist, journalist, and writer on sport; author of *Angling in Salt Water*, *Wild Sports in Ireland*, etc.

**Bickerstaffe**, **ISAAC** (1735–1812 ?), Irish dramatist; author of many popular plays; name used as pseudonym by both Swift and Steele.

**Bickerstaffe - Drew**, **COUNT FRANCIS BROWNING DREW** (1858– ), Eng. R.C. prelate, novelist, and essayist; was senior chaplain to the forces at Malta and at Salisbury Plain; has been private chamberlain to the Pope; was made domestic prelate to His Holiness (1904); Knight of the Holy Sepulchre and count (1909), and protonotary apostolic (1912); served in retreat from Mons, being twice mentioned in dispatches. Under the pseudonym of 'John Ayscough' has written a number of romances—e.g., *Marotz*, *Mr. Beke of the Blacks*, etc.; and in his *French Windows* gives an interesting record of personal talks with soldiers and war experiences generally.

**Bickersteth**, EDWARD (1850-97), Eng. missionary; laboured in India, and afterwards was appointed Bishop of S. Tokio, Japan; author of *Our Heritage in the Church*.

**Bickford's Fuse**, a slow-burning time fuse; consists of core of compressed fine-grained gunpowder surrounded by jute yarn, often protected by tape and varnished; time of burning should be 1 ft. in 30 seconds.

**Bicycle**. See CYCLING.

**Bida**. (1) Administrative dist., Nigeria, W. Africa, under Brit. control since 1901. (2) Chief tn. of above (9° 5' N., 6° 2' E.); embossed brass and copper work: indigo; on l. bk. of Niger: cap. of native kingdom of Nupe.

**Bidar**, tn., headquarters of dist. of same name, Haidarabad, India (17° 55' N., 77° 32' E.); famed for metal ware, to which it has given its name. Pop. 12,700.

**Bilassoa**, small riv., Spain (43° 22' N., 1° 45' W.), forms part of frontier with France.

**Biddeford**, city, Maine, U.S. (43° 28' N., 70° 27' W.); has cotton, woollen, and lumber mills, receiving water power from falls of Saco R.; granite. Pop. 17,100.

**Bidder**, GEORGE PARKER (1806-78), Eng. engineer; calculating prodigy; assisted George Stephenson; designed Victoria Docks (London) and the first railway swing bridge; was a founder of Electric Telegraph Co. GEORGE PARKER BIDDER (1836-96), son of above, was an authority on cryptography.

**Bidding Prayer**, the prayer which is said before the sermon (Canons of 1603) in cathedral and collegiate churches, special

mention being made of officials in Church and State, and also of institutions in which the congregation is directly interested.

**Biddle**, JOHN (1615-62), 'father of Eng. Unitarianism'; denied divinity of Holy Spirit; several times imprisoned for opinions; died in prison.

**Bideford**, par. and seapt. tn., Devonshire, England (51° 1' N., 4° 13' W.); birthplace of Sir Richard Grenville; Kingsley wrote part of *Westward Ho!* here; potteries, ship-building, sail lofts, etc. Pop. 9,100.

**Bidens**, composite genus of swamp-growing plants found throughout U.S., often with bright yellow flowers—e.g., bur marigold (*Bidens laevis*), etc.

**Bidpai**, FABLES OF, or the BOOK OF KALILAH WA DIMNAH, a collection of twelve didactic beast-fables, originating in India, which have been trans. into many languages; actual authorship unknown; earliest trans. A.D. 570.

**Bidri**, or BIDDERY, alloy of zinc, tin, lead, and copper used in India for metalwork.

**Biebrich**, tn., Prussia (50° 2' N., 8° 14' E.); grand-ducal palace; soap, gypsum, aniline dyes; iron foundries. Pop. c. 21,000.

**Biel** (Fr. *Bienne*), tn., Bern, Switzerland (47° 9' N., 7° 15' E.), on lake of same name; important watch factories; museum, rich in antiquities. Pop. 23,700. Remains of prehistoric village discovered in lake; Ile de St. Pierre was refuge of Rousseau (1765).

**Bielä**, WILHELM VON, BARON (1782-1856), Ger. astronomer; discovered three comets, one of which bears his name.

**Bielaya**, riv., Russia, rises in Urals; joins Kama (55° 55' N.,



53° 33' E.); important waterway. Length, 450 m.

**Bielaya-Tserkov**, tn., Kiev, Russia (49° 49' N., 30° 9' E.); on trib. of Dnieper; important ann. fairs; trade in cattle, beer, grain; immortalized by Pushkin in poem *Poltava*. Pop. 54,000.

**Bielefeld**, town, Westphalia, Germany (52° 1' N., 8° 32' E.); centre of linen industry; damask, silk, sewing machines. A philanthropic settlement known as Bethel is 2 m. distant (established by Julie Sutter). Pop. 78,300.

**Bielev**, tn., Tula, Russia (53° 48' N., 36° 8' E.); sugar refining, distilling, tanning; trade in cattle, grain, hemp; river port; Empress Elizabeth died here (1826). Pop. 10,000.

**Bielgorod**, tn., Kursk, Russia (50° 30' N., 37° 50' E.); famous ann. fairs; soap, candle, brick making; bee farming; has two cathedrals. Pop. 22,000. The 'Lines of Bielgorod' consist of earthen rampart between Don and Vorskla, erected 1633-1740.

**Bielina**, tn., Bosnia, Jugoslavia (44° 45' N., 19° 13' E.); grain and cattle market; contains a garrison. Pop. 10,100.

**Bielitz**, tn., Silesia (Plebiscite Area) (49° 48' N., 19° 2' E.); manufactures woollen goods, machinery, and rails. Pop. 18,600.

**Bielo-Ozero**, large sheet of water, Novgorod, Russia. Length, 25 m.; breadth, 20 m. Bielozersk (60° N., 37° 46' E.), anc. tn., stands on s. shore. Pop. 6,000.

**Bielopol**, tn., Kharkov, Russia (51° 12' N., 34° 21' E.); distilling, tanning, brick making; trade in grain and cattle; founded 1672. Pop. 15,000.

**Bielostok**, tn. and industrial

centre, Poland (53° 6' N., 23° 10' E.); was evacuated by Russians during retreat (Aug. 1915); several times bombed by Germans; had cloth, silk, and hat manufactures and grain trade. Pop. 81,500.

**Bielotsarsk**, tn., Siberia, Russia (51° 38' N., 94° E.); in course of construction; large trade in furs; forest fires frequently occur in the district (1915).

**Bielovicisk Forest**, on the Russian border of Poland (intersected by 52° 30' N., and 24° E.); practically the only remaining virgin forest of Europe; scene of action between retreating Russians and Austro-Ger. army under Prince Leopold of Bavaria (Aug. 1915).

**Bielski**, MARTIN (1495-1576), Polish historian; wrote a history of Poland, the first historic book printed in Polish; was continued by his son JOACHIM (1540-99).

**Bielsti**, tn., N. Bessarabia, Rumania (47° 42' N., 27° 58' E.); bricks, soap, candles; trade in live stock; annexed by Russia (1812); Rumanian by Peace Treaty (1919). Pop. 20,000.

**Bien-hoa**, cap. arrondissement of same name. Fr. Indo-China (11° N., 106° 47' E.); furniture factories. Pop. 20,000.

**Bienne**. See BIEL.

**Biennial Plants**, strictly speaking, plants which do not blossom till the year following that of the germination of the seed, and which die after having flowered—e.g., foxgloves, hollyhocks, cabbage, turnip. Term often applied to plants which are at their best during second year of life.

**Bienvenu-Martin**, JEAN BAPTISTE (1847- ), Fr. politician;

was minister of public instruction, fine arts, and religion (1905); of justice (1914).

**Bierley**, NORTH, par., W. Riding, Yorkshire, England (53° 48' N., 1° 44' W.); coal mines; iron works. Pop. 16,000.

**Bier's Congestion Treatment**, a form of treatment by means of a thin rubber bandage about 2½ in. wide applied tightly enough to obstruct the veins but not the arteries; skin becomes red, but there should be no pain or discomfort; bandage is left from six to twelve hours; when bandage cannot be applied, same conditions can be obtained by suction glass or by using hot air; applied in cases of tuberculosis, rheumatism, sciatica, ununited fractures and septic conditions.

**Biesbosch**, dist., Netherlands (51° 46' N., 4° 56' E.); agglomeration of islands, waterways, and marshes; result of bursting of dam in Maas (1421); most of land reclaimed by dykes; intersected by artificial channel, and connected with North Sea by two waterways. Area, 70–80 sq. m.

**Bigamy**, the act of a person marrying again during the lifetime of the first wife or husband. In canon law a second marriage, or marriage with one who has been married before, is bigamy. According to the eccles. law of England a bigamous marriage is void, and the maximum punishment in the civil courts is seven years' penal servitude. To support a charge of bigamy a valid marriage must in the first instance be proved, and if it can be shown that the person charged really believed, and had reasonable grounds for believing, that his

or her wife or husband was dead at the time of the later marriage, the charge fails; also if the person charged has neither seen nor heard of or from the first husband or wife for seven years immediately preceding the later marriage, the charge likewise fails. Until the reign of William III. bigamy was punishable by death; afterwards by life imprisonment and branding of the right hand; present penalty was instituted by an Act of George I. The offence assumed grave proportions during and after the Great War.

**Bigelow**, FRANK HAGAR (1851– ), Amer. meteorologist, prof. of meteorology in U.S. weather bureau; author of several monographs on the subject.

**Bigelow**, JOHN (1817–1911), Amer. diplomat and author; proprietor and editor *New York Evening Post*; U.S. minister to France (1864–7); secretary of state of New York (1875–7); author of *Life of Benjamin Franklin*, etc.

**Bigelow**, POULTNEY (1855– ), Amer. journalist and author, educated in Germany; made acquaintance of Crown Prince, afterwards Emperor William II., and has written books on Germany; a celebrated canoe traveller; has written travel books—*Paddles and Politics down the Danube*, etc.

**Biggar**, par. and tn., Lanarkshire, Scotland (55° 37' N., 3° 32' W.); cattle and horse fairs; pre-Reformation church. Pop. 2,000.

**Biggarsberg Mountains**, in Natal, S. Africa (28° 48' S., 30° 38' E.); branch from Drakensberg Mts.; highest peak, Indumeni (7,200 ft.).

**Biggleswade**, urban dist., Bedfordshire, England (52° 6' N., 0°

16' w.); corn trade; market gardening; straw-plait, lace, thread. Pop. 5,400.

**Bigha**, tn. and dist., Turkey in Asia (40° 16' N., 27° 14' E.), 100 m. N. of Brusa; Pop. of tn. c. 12,000; dist. c. 140,000.

**Bighorn**, the Rocky Mountain wild sheep (*Ovis montana* and northern allies). See SHEEP.

**Bight**, geographical term for narrow bay or recess on sea coast between comparatively distant headlands—e.g., Bight of Benin and Great Australian Bight.

**Bignonia**, genus of about a hundred species of evergreen scandent shrubs; *B. capreolata*, the trumpet flower, best known in Britain.

**Bigsby**, JOHN JEREMIAH (1792–1881), Eng. geologist and physician; served on Canadian Boundary Commission; made researches on geol. of Canada.

**Bihar**. See BEHAR.

**Bihari**, one of the four principal Ind. languages, the others being Bengali, Assamese, and Oriya. It is spoken by about 35,000,000 people.

**Bijapur**. (1) Dist., S. Bombay, India; rainfall irregular; cotton, *jowar*, and wheat. Area, 5,669 sq. m.; pop. 863,000. (2) Tn., in above dist. (16° 49' N., 75° 43' E.); cotton ginning; trade in grain and cattle; became British in 1848. Pop. 27,600.

**Bijawar**, feudatory state, Central India; barley, grain; iron ore, diamonds; under Brit. administration (1901). Area, 973 sq. m.; pop. 125,200. Chief tn. Bijawar (24° 39' N., 79° 30' E.), 80 m. S.E. of Jhansi. Pop. 6,000.

**Bijnor**, dist., United Provinces, India; sugar-cane grown; sugar

manufacture. Area, 1,791 sq. m.; pop. 780,000. Cap. Bijnor (29° 22' N., 78° 8' E.); sugar; Brahmanical threads. Pop. 17,400.

**Bijns**, ANNA (c. 1494–1575), Dutch poetess, the 'Sappho of Brabant'; first important writer in modern Dutch; inveighed against Luther and the new religion; handled the refrain with much originality.

**Bikaner**. (1) Feudatory state, Rajputana, India; mostly sandy and waterless; frequent famines; woollen shawls, carpets, pottery, lacquer-ware; coal mines, sandstone quarries. During Great War maharajah served on staff of Brit. commander-in-chief; gave private contribution of 250,000 rupees for war purposes (1916), and represented India at the Peace Conference, Paris (1919). Area, 23,315 sq. m.; pop. 701,000. (2) Cap. of above (28° N., 73° 18' E.); Jain temples; white sugar-candy. Pop. 55,700.

**Bikrampur**, anc. tn., Bengal, India (23° 31' N., 90° 30' E.); famous seat of Sanskrit learning; centre of government under Sen kings of Bengal.

**Bilaspur**, tn., Central Provinces, India (22° 5' N., 82° 10' E.); silk weaving, cotton cloth manufacture. Pop. 19,800.

**Bilbao**, tn., principal port, N. Spain (43° 15' N., 2° 55' W.), founded 1300; centre of great mining dist.—iron, copper ores; handsome public buildings. Besieged unsuccessfully by Carlists (1836, 1874). Pop. 92,500.

**Bilbeis**, or BELBEIS, tn., Lower Egypt (30° 25' N., 31° 33' E.); besieged by Crusaders (1163, 1168); fortifications restored (c. 1800). Pop. 13,500.

**Bilberry**, **BLAEBERRY**, or **WHORTLEBERRY** (*Vaccinium myrtillus*), small shrub with ovate leaves and purple edible berries, growing in N. temperate and Arctic zones. See **VACCINIUM**.

**Bilderdijk**, **WILLEM** (1756–1831), Dutch poet; pub. collections of love songs in 1781 and 1785; an epic, *Elias* (1786); a didactic poem, *Maladies of the Learned* (1807); a tragedy, *Floris V.*, etc.; described by Ten Brink as ‘the cleverest versemaker of the 18th cent.’

**Bildt**, **BARON VON** (1850– ), Swed. diplomatist and historian; ambassador at Rome and London; represented Sweden at the Hague (1899); has pub. several historical works.

**Bile**, the secretion from the liver; orange-brown or green in colour; has characteristic smell.

**Bilejik**, tn., vilayet of Brusa, Asia Minor (40° 9' N., 29° 58' E.); silk industry; taken by Turks (1299). Pop. 11,000.

**Bilharziosis**, disease, occurring in Africa, caused by the presence of the ova and embryos of a parasite, *Bilharzia hæmatobia* (*Schistosoma hæmatobium*), in the blood-vessels of the mucous membrane of the bladder and urinary passages; the parasites are supposed to enter the body either by the rectum or urethra when bathing in infected water, or by swallowing infected food or drink. The treatment is mainly surgical, but *flix mas*, or benzoic acid in large quantities of water, along with methylene blue at stated intervals, have proved of benefit. See under **TREMATODE WORMS**.

**Bilimbı** (*Averrhoa bilimbi*),

tree of family Oxalidaceæ, represented in this country by wood sorrel; cultivated throughout India for fruits, which are acid, but palatable when pickled.

**Bill** (med. Lat. *billa*, from Lat. *bullā*, any circular or cylindrical object resembling a seal). (1) *Bill of Parliament*, see **ACT**. (2) *Bill of Attainder*, see **ATTAINDER**. (3) Beak of a bird and other animals. (4) Pruning instrument of husbandman, with blade curved like bird's bill. (5) Military weapon of similar shape used from O.E. times to 18th cent. (6) Letter, as in bill of costs (solicitor's account), bill of credit, bill of exchange (see below), bill of health (certificate furnished to shipmaster by authorities of port from which he sails).

*Bill of Exchange*, an order in writing addressed by one person to another for the payment of a certain sum of money at a certain time, without condition or restriction; may be made payable either at home or abroad. The following is an example of an inland bill:

CAMBRIDGE, July 1, 1920.

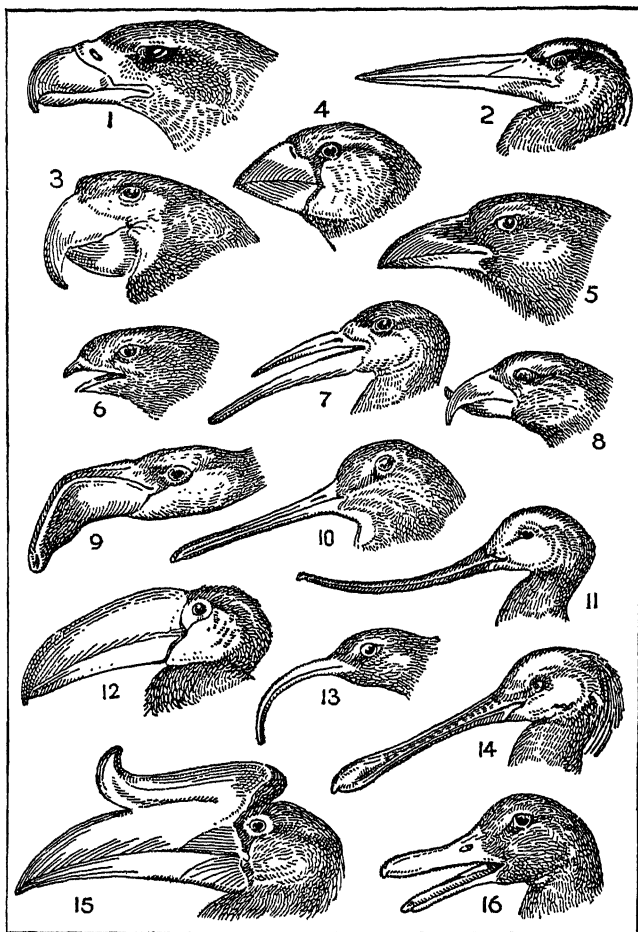
£300.

Two months after date pay to Mr. H. Black, or order, the sum of three hundred pounds, value received.

MURPHY & Co.

Messrs. Jones & Robinson,  
Edinburgh.

Here Murphy & Co. are the ‘drawers,’ Jones & Robinson the ‘drawees,’ and H. Black the ‘payee.’ As soon as the drawees write their signature across the face of the bill, with or without the word ‘accepted,’ they are called the ‘acceptors.’ By so



*Bills or Beaks : characteristic forms.*

1. Eagle. 2. Heron. 3. Macaw. 4. Hawk. 5. Raven. 6. Swift. 7. Scissorbill. 8. Crossbill.  
 9. Flamingo. 10. Woodcock. 11. Avocet. 12. Toucan. 13. Sun-bird. 14. Spoonbill.  
 15. Hornbill. 16. Drake.

doing they signify that they have agreed to the order of the drawers; they are not liable on the bill until they have done so, and have delivered the bill to the person who is entitled to it. As the bill is payable to order, the payee must write his signature on the back of the bill before he can obtain payment of it or transfer it to a third party. A bill of exchange is good payment for a debt unless and until it has been dishonoured, when the debt revives, and the creditor is not bound to accept payment by another bill, or by cheque, but can demand payment in cash. No person can be made liable on a bill unless he has affixed his signature and has a legal capacity to contract—*e.g.*, an infant cannot be made liable on a bill of exchange. A bill is said to be dishonoured when the drawee refuses to accept it when presented, or refuses to pay it when due. An *Accommodation Bill* is one drawn and accepted for which no real value has been given. It is usually an arrangement between two parties for securing temporary financial accommodation by getting the document discounted at a bank.

*Bill of Rights*, which became Act of Parliament in 1689, enforcing, among other enactments, the Prot. religion on Eng sovereigns, declaring William III. and Mary II. King and Queen of England, and setting forth chief liberties or 'rights' of subjects.

*Bill of Sale*, a deed by which the ownership of personal chattels, but not the possession thereof, is transferred from one person called the grantor to another person

called the grantee. The grant may be absolute—*i.e.*, the goods and chattels may be sold outright to the grantee, or the grant may be conditional, in which case it is usually made as a mortgage (security for the repayment of money lent by the grantee to the grantor). If the money is repaid the grant ceases to have effect—*i.e.*, the grantee has no longer any claim upon the chattels; but if the money is not repaid, the grantee may, under certain conditions, take possession of the goods; this is known as foreclosure. A bill of sale can only be given in regard to personal chattels (which term includes goods, furniture, trade effects, fixtures, etc.). Statutes regulating bills of sale were passed in 1854, 1866, 1878, 1882, 1890, and 1891.

**Billardiera**, genus of Australian shrubs related to rose family; known as apple-berry.

**Bill Chamber**, in Scotland, a branch of the Court of Session which exercises a summary and preventive jurisdiction, and is accessible at all times.

**Bille**, STEEN ANDERSEN (1797–1883), Dan. sailor; commanded *Galatea* on her voyage round the world (1845); twice minister of marine (1852–3 and 1860–8); became a councillor of state.

**Billeting**, quartering of soldiers in private houses; declared illegal in peace time by Petition of Right (1628), and Act of 1679. Under Lord Haldane's reorganization of the army, troops can be billeted during ann. manoeuvres; during Great War, billeting was extensively used both at home and in the theatres of war.

**Billiards**, a table game, the origin of which is lost in obscurity; mentioned in will of a 2nd cent. Irish king; referred to in Shakespeare's *Antony and Cleopatra*, mentioned by Spenser, and was the fashionable game in France during the reign of Louis XIV. Eng. billiards is now played upon oblong tables, 12 ft. long by 6 ft. broad, resting upon six legs. The framework is usually of mahogany, the bed of the table consisting of slabs of slate, very accurately fitted and levelled, the side-cushions being of vulcanized india-rubber. The bed of the table and the cushions are covered with a fine green cloth, and six pockets are placed around the table—one at each corner and one in the centre of each side. In the ordinary game three balls are used, two white ('spot' and 'plain') and one red. The best of these are of African ivory,  $2\frac{1}{8}$  in. in diameter, but in recent years composition balls, such as 'bonzoline' and 'crystalate,' have been largely used. The cue used for striking is an ash staff, 4 ft. 9 in. in length, tipped with leather. Longer cues are used with a 'rest' to support them when the balls are too far distant for a player to strike them with the ordinary cue supported on his hand as a rest. The ordinary game is to make 100 points (or any fixed number) by scoring cannons (2) (striking the other white and the red ball), or by striking the red ball with the player's ball, and so driving either ball into a pocket (3). The score is recorded on a 'scoring board,' which marks up to 100. Each time points are

scored the player is entitled to another stroke. *Pyramids* and *Pool* are other games of billiards. The size and shape of the pockets and the markings of the table were standardized by the Billiard Association about 1900. In 1919 a uniform set of rules of play was drawn up by the governing body. Amer. and Fr. billiards are cannon (Amer. *carom*) games, the tables being smaller and without pockets.

J. Roberts, *The Game of Billiards* (1898).

**Billing**, AXEL GOTTFRED LEONARD (1841– ), Swed. theologian and politician; court chaplain since 1885; vice-chairman of first Chamber of Parliament (1912).

**Billing**, N. PEMBERTON (1880– ), Brit. politician; was a squadron commander in Royal Naval Air Service; resigned and entered Parliament (1916) for E. Herts to advocate 'a strong air policy'; founder and editor of *Aerocraft* (1908–10).

**Billings**, city, Montana, U.S. (45° 47' N., 108° 37' W.); cattle and sheep raising; limestone, coal, marble. Pop. 10,000.

**Billings**, JOSH. See SHAW, HENRY W.

**Billingsgate**, old river-gate and wharf, now fish-market of London; in general use 16th cent.; variety of Cockney spoken here is noted for freedom and cursory expressiveness.

**Billington**, ADELINE (1825–1917). Eng. actress; played many and various parts with success; in later years was engaged in dramatic teaching.

**Billiton**, isl., administrative div., Dutch E. Indies (2° 42' N.,

107° 55' E.); coal mines; tin deposits; basket and mat making; copra and gum exported. Area, 1,860 sq. m.; pop. 36,800.

**Billon** (Fr., 'debased coin'), alloy of silver and copper used in making medals and coins.

**Billot**, JEAN BAPTISTE (1828-1907), Fr. general and senator; served in Algeria and Mexico, and commanded the 18th Army Corps in Franco-Prussian War; minister of war (1882), and introduced many army reforms.

**Billroth**, ALBERT CHRISTIAN THEODOR (1829-94), Ger. surgeon; prof. of surgery at Zürich (1860) and Vienna (1867); was made a member of the Austrian House of Peers (1887); one of the greatest surgeons of his time; was the first to operate for cancer of the stomach; modern ambulance system largely due to him.

**Bilma**, settlement, Kavar oasis, Sahara Desert (18° 44' N., 13° 22' E.); salt; under Fr. influence (1809).

**Bilney**, THOMAS (c. 1495-1531), English Prot. martyr; preached publicly at Cambridge; burned.

**Bilse**, OSWALD FRITZ (1878-), Ger. soldier; dismissed the service for his book, *Life in a Garrison Town*; author of dramas and a novel.

**Bilston**, urban dist., par., and mrkt. tn., Staffordshire, England (52° 34' N., 2° 3' W.); iron smelting and founding; engineering. Pop. 27,500.

**Biltong**. See BILLITON.

**Bimana** ('two-handed'), term once used to distinguish man from Quadrumana (monkeys).

**Bimetallism**, employment of mixed currency, gold and silver, as legal tender of a country; in

Britain monometallic system is in force, gold being recognized legal tender; it is contended that ratio (about 16 to 1) should be fixed between two metals, and that less fluctuation in prices of metals would result; open to objection that scheme was tried in France with little success; free coinage of silver suspended by Paris Mint, 1873. In U.S. gold has been standard since (nominally) 1873. Bland Silver Bill (1878), a compromise, provided for monthly silver coinage of from \$2,000,000 to \$4,000,000; Sherman law (1890) provided for monthly purchase by Treasury of 4,500,000 oz. of silver and issue of Treasury notes for it—notes and silver were full legal tender; purchase abandoned, 1893. Presidential bimetallism candidate was defeated (1896), and with Currency Law (1900) and general introduction of gold standard, bimetallism died as a popular cause.

Darwin, *Bimetallism* (1897); Farrer's *Studies in Currency* (1902); *Report of Gold and Silver Commission* and of *International Monetary Conference of Brussels, 1892*.

**Binary Nomenclature**, application of a generic and a specific name for plants and animals—e.g., *Caltha palustris* (marigold).

**Binary System**, double stars revolving around each other.

**Binche**, tn., Belgium (50° 24' N., 4° 9' E.); lace; scene of operations at battle of Mons (Aug. 23, 1914). Pop. 12,300.

**Bindusara**, or AMITRAGHATA, Emperor of India (297-272 B.C.); son of CHANDRAGUPTA.

**Bindweed**. See under CONVULVACEÆ.



**Binet**, ALFRED (1857- ), Fr. psychologist; director of physiological psychology at the Sorbonne; an eminent experimental psychologist; roused much keen discussion by his 'Metrical Scale of Intelligence.'

**Bingen**, tn., Hesse, Germany (49° 57' N., 7° 54' E.), on Rhine; wine, leather; tourist resort; in middle of river stands the famous 'Mouse Tower,' where, according to legend, Bishop Hatto was eaten by mice. Pop. 10,000.

**Binger**, LOUISE GUSTAVE (1856- ), Fr. explorer and author; explored country between Fr. Sudan and Bight of Benin; director of Fr. Colonial Dep. (1898-1907).

**Bingham**, HON. EDWARD BARRY STEWART (1881- ), British sailor; commanded a destroyer flotilla at the battle of Jutland; awarded v.c. His boat, the *Nestor*, was sunk, and he was a prisoner of war in Germany until the armistice. He published *Falklands, Jutland, The Bight* (1919).

**Bingham**, HIRAM (1875- ), Amer. explorer and author; has been on several expeditions to S. America; lecturer in Latin-Amer. history at Yale since 1908; works include *Across South America* (1911), and *In the Wonderland of Peru* (1913).

**Binghampton**, tn., New York, U.S. (42° 6' N., 75° 53' W.); flour, cigars, glass, boots, clocks, and other industries. Pop. 48,400.

**Bingley**, mrkt. tn., W. Riding, Yorkshire (53° 52' N., 1° 50' W.); woollens, paper. Pop. 18,800.

**Binh-Dinh**, tn., Annam, Fr. Indo-China (13° 52' N., 109° 7' E.); port, Kwinhon. Pop. 74,400.

**Binmaley**, tn., Luzon, Philippines (16° 5' N., 120° 18' E.); rice, salt. Pop. 16,400.

**Binney**, EDWARD WILLIAM (1812-81), Eng. geologist; authority on Lancashire coal measures; helped James Young in the discovery of the Bathgate shale seams.

**Binney**, THOMAS (1798-1874), Eng. Congregationalist preacher; wrote *Is it Possible to Make the Best of Both Worlds?* (1853).

**Binnie**, SIR ALEXANDER RICHARDSON (1839-1917), Eng. civil engineer; knighted in 1897; constructed Nagpore waterworks (India), railways in Wales, Bradford waterworks, Blackwall tunnel, and Barking Road Bridge.

**Binomial**, algebraical expression composed of sum or difference of two quantities. For expansion, see ALGEBRA.

**Bintang**, isl., Dutch E. Indies (0° 45' N., 104° 38' E.); gambier. Area, 450 sq. m.; pop. 18,000.

**Binturong** (*Arctitis binturong*), nocturnal civet-like carnivorous animal found in E. Ind. forests.

**Binue**. See BENUE.

**Binyon**, LAURENCE (1869- ), Eng. poet; won Newdigate prize (1890); assistant keeper Brit. Museum; his volumes of verse include *London Visions*, *The Praise of Life*, *Odes*, *Porphyrion and Other Poems*, *The Death of Adam*, all showing strong class feeling; his play, *Attila*, performed at His Majesty's, lacks variety of emotion, as also does *Paris and Cenone*, but the strength and finish of some of his non-dramatic work, especially *Malham Cove*, deserves high praise; author of excellent books on Brit. and Oriental art.

**Bio-Bio.** (1) Prov., Chile (37° 45' s., 72° w.); cap. Los Angeles; agriculture, timber. Area, 5,245 sq. m.; pop. 100,200. (2) Riv., Chile (38° 50' s., 71° 10' w.); length, 220 m.; navigable 100 m.

**Biogenesis**, term introduced by Huxley for theory 'that living matter always arises by the agency of pre-existing living matter.' The term used for the opposing doctrine is *abiogenesis*. See BIOLOGY.

**Biograph.** See under CINE-MATOGRAPH.

**Biography** (Gr. *biographia*, from *bios*, 'life,' *graphein*, 'to write'), history of a person's life. One of the earliest forms of literature, the epic poem, takes the shape of biography; long after close of Homeric age, authors such as Æschylus, Sophocles, and Euripides treated their characters as subjects of biography, not legend, and as such they were considered by the audience; pure biography was developed both in Greece and Rome. The Gr. historian Plutarch (c. A.D. 45-c. 125) set model of biography in his *Lives of Illustrious Greeks and Romans*, which was trans. into French by Amyot (1513-93), turned into class. English (1579) by North, and became the groundwork of Shakespeare's class. plays.

In the Middle Ages mystery and miracle plays were intended to be biographical, as were also the various rhyming histories of the saints. The biography, as we know it, began to be written in the 16th cent., when Cavendish wrote famous *Life of Wolsey* and William Roper penned a life of his father-in-law, Sir Thomas More. Notable Eng. biographies

are: in the 17th cent. Fuller's *Worthies of England*, Izaak Walton's lives of Donne, Wotton, Hooker, Herbert, and Sanderson, the *Athenæ Oxoniensis* of Anthony à Wood; in the 18th cent. Dr. Johnson's *Lives of the Poets* (1779-81), important in the history of criticism, Godwin's *Life of Chaucer* and *Lives of the Necromancers*, and (1791) Boswell's *Life of Dr. Johnson*.

Nearly everybody of importance has been the subject of a biography since beginning of 19th cent.; among outstanding biographies in English are Lockhart's *Scott*, Southey's *Nelson*, Coleridge's *Biographia Literaria*, Thomas Moore's *Life of Byron*, Carlyle's studies of *Burns*, and other small masterpieces in the *Essays*, greater than his *Frederick* and other larger biographies, Froude's *Bunyan*, *Eng. Seamen*, *Carlyle*, etc., Scaliger's *Milton* (1879), Sellar's *Roman Poets* (these have their counterparts in France in books of Boissier), the various biographies by Lord Morley, notably his *Gladstone* (1903), Winston Churchill's *Life of Lord Randolph Churchill*, W. Ward's *Cardinal Newman*, Cabot's *Emerson*, Lounsbury's *James Fenimore Cooper*, Paine's *Mark Twain*, Trevelyan's *Macaulay*, Sir Leslie Stephen's *Henry Fawcett*, Dowden's *Shelley*, Sir Sidney Lee's *William Shakespeare*, Sir E. T. Cook's *Ruskin*, W. F. Monypenny's and G. E. Buckle's *Disraeli*, Prof. Harper's *William Wordsworth*, and Garvin's *Joseph Chamberlain* (1920). Works on national biography—e.g., *Dictionary of National Biography*, *Cyclopedia of American Biography*, and

*Allgemeine Deutsche Biographie*—have been compiled in many modern countries.

**Biology**, life-lore; the description of all the phenomena of what is called life falls within its scope. For practical purposes, however, it is convenient to delimit this branch of science by excluding the study of human beings, except in so far as comparison and relation with other living organisms is concerned. Biology is, therefore, the comparative description of the structure, functions, distribution, and evolution of animals and plants, the more particular study of each being the function of the sciences of Zoology and Botany respectively. See ANIMAL KINGDOM; EVOLUTION.

**Bion** (1) OF BORYSTHENES (c. 250 B.C.), Gr. cynic philosopher; only fragments of his satires remain. (2) OF SMYRNA (c. 100 B.C.), Gr. bucolic poet, whose best known poem is the *Lament for Adonis*.

**Biondi**, SIR GIOVANNI FRANCESCO (1572–1644), romance writer, born at Lesina, Dalmatia, joined Eng. diplomatic service; wrote *History of the Civill Warres of England* (trans. 1641).

**Biot**, JEAN BAPTISTE (1774–1862), Fr. astronomer, prof. of physics, Coll. de France; made first balloon ascent for scientific purposes (1804); was the first to investigate the phenomena of mirage; invented the polarimeter.

**Biotite**  $((\text{H}, \text{K})_2(\text{Mg}, \text{Fe})_2\text{Al}_2(\text{SiO}_4)_3 \text{ to } (\text{H}, \text{K})_2(\text{Mg}, \text{Fe})_4(\text{Al}, \text{Fe})_2(\text{SiO}_4)_4)$ , important rock-forming mineral in igneous and crystalline rocks; a monoclinic mica; colour black; breaks up into thin scales.

**Bipartite**, divided in two parts

almost to the base, as in many leaves (bot.); of curve with two branches (maths.); bipartite factor, quantity which, when squared, exactly divides another quantity.

**Biplane**. See AEROPLANE.

**Biquadratic** ('twice-squared'), fourth power of a quantity; equation in which highest power of unknown is biquadratic.

**Biquintile**, two-fifths of circle; two-fifths of  $360^\circ = 144^\circ$ .

**Bir**, tn., Asiatic Turkey ( $37^\circ 2' \text{ N.}$ ,  $38^\circ \text{ E.}$ ), on Euphrates; former crossing place of caravans on route between Syria and Mesopotamia. Pop. 10,000.

**Birbhum**, dist., Bengal, India ( $24^\circ \text{ N.}$ ,  $87^\circ 36' \text{ E.}$ ); dry climate; healthy; rice, mulberry, maize, sugar-cane grown; manufactures cotton, silk. Cap. Suri. Area, 1,752 sq. m.; pop. 902,200.

**Birch** (*Betula*), genus of hardy trees and shrubs of N. temperate zone to  $70^\circ \text{ N.}$ , *B. alba* being the common species, forming large forests in Russia; has a silvery cuticle, easily peeled, small irregularly serrated leaves, and the fruit has membranous wings to assist its dispersal. The bark (from which an oil is obtained), wood, and sap are applied to various uses. Twigs of birch form castigation rods in schools and prisons.

**Birch**, CHARLES BELL (1832–93), Eng. sculptor; works include *The Last Call*, *The Wood Nymph*, and statues of Queen Victoria, Beaconsfield, Gladstone, etc.; elected A.R.A. in 1880.

**Birch**, SAMUEL (1813–85), Eng. Egyptologist and archaeologist, keeper of Egyptian and Assyrian antiquities, Brit. Museum; founded Soc. of Biblical Archaeology (1870); pub. *Select Papyri in the*

*Hieratic Character* (1841-4), *History of Egypt* (1875), etc.

**Birch, WALTER DE GRAY** (1842- ), scholar, son of Samuel Birch, Egyptologist; senior assistant MSS. dep. Brit. Museum (1865-1902); librarian and curator to Marquess of Bute (1902-14); ed. for many years *Journal of the British Archaeological Association*; works include *History of Margam Abbey*.

**Birch - Pfeiffer, CHARLOTTE** (1800-68), Ger. actress and dramatist, of Stuttgart; wife of Christian Birch, the Dan. historian; acted chiefly in Court Theatre, Berlin; plays include *Die Waise von Lowood*, a dramatized version of *Jane Eyre*.

**Bird, EDWARD** (1772-1819), Eng. genre painter, R.A. (1815); works include *Good News*, *The Village Politicians*, *Chevy Chase*.

**Bird, ISABELLA.** See BISHOP, ISABELLA.

**Bird, WILLIAM.** See BYRD.

**Bird-catching Spider** (*Mygale avicularia*), large variety, 2 in. long; legs extend to 7 in.; native of Surinam; said to suck blood of small birds.

**Bird Cherry** (*Prunus padus*), tree of order Rosaceæ; allied to cherry and plum; known as 'hagberry'; small flowers appear in May; fruit bitter.

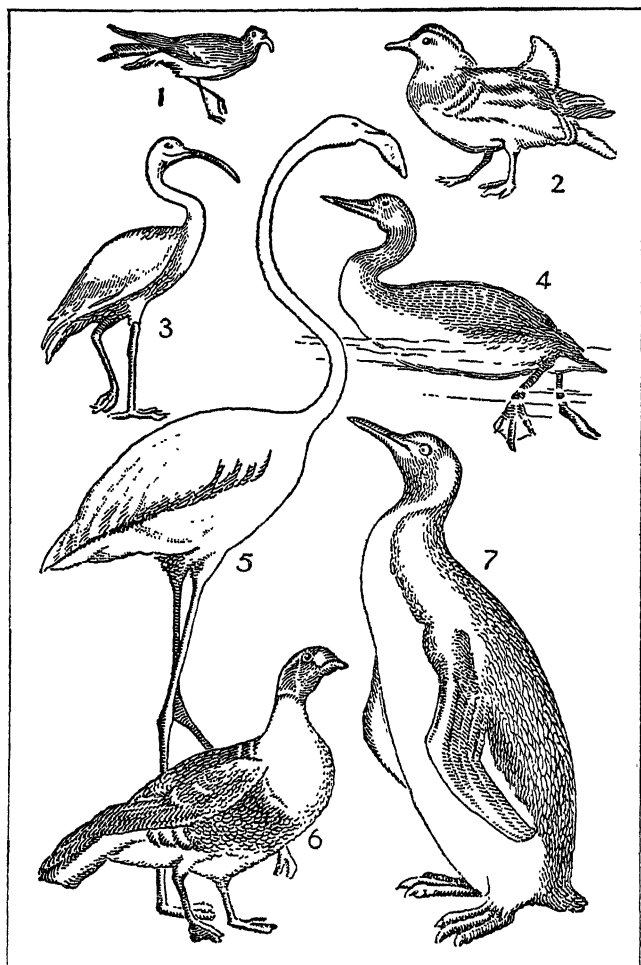
**Birds** (*Aves*), a class of highly specialized vertebrate bipeds of world-wide distribution, characterized by their intense metabolism, indicated by high body temperature, by numerous anatomical adaptations for the function of flight, by the possession of feathers, and by the hatching of their young from eggs with calcareous shells.

The extinct ARCHÆOPTERYX forms the sub-class Archæornithes or Saururæ. All other birds are included in the sub-class Neornithes.

The first division of the latter, Ratitæ, running birds without power of flight, persisting since the Miocene, with keelless breastbone, are represented by the ostrich (*Struthio*) of Africa and Arabia, the S. Amer. ostrich (*Rhea*), the Australian emu (*Dromæus*) and Australian-Malayan cassowaries (*Casuarius*), the little wingless and four-toed kiwi (*Apteryx*) of New Zealand and its extinct giant relative, the moa (*Dinornis*), the recently extinct order Æpyornis of Madagascar, and various Eocene and Pleistocene species.

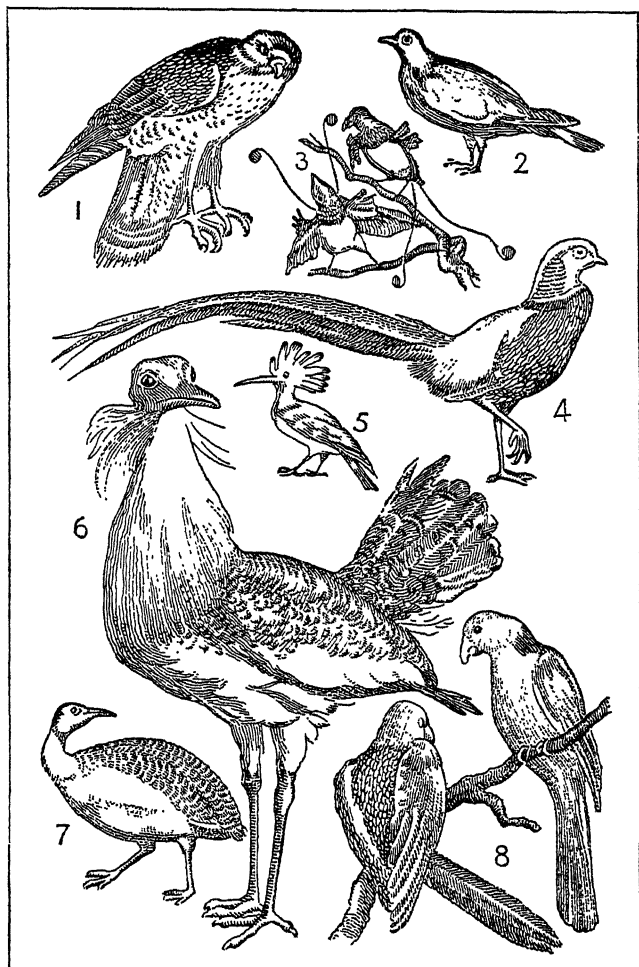
The second division, Odontolcæ, consists of extinct swimming birds with keelless breastbone and teeth situated in grooves, and a few affinities to living flying types. *Hesperornis* of N. America and *Enaliornis* of English cretaceous strata are the typical representatives.

The flying birds with keeled breastbone are comprised in the third division, Carinatae. Their principal adaptations for flight are the general shape of the body, offering comparatively little resistance to the air; the construction of the wings; the keeled breastbone for the attachment of the powerful pectoral muscles; the air-spaces in the body cavity and in the long bones in connection with the non-expandible lungs, and the air in spongy spaces in the skull-bones connected with the Eustachian and nasal tubes, facilitating



*Wading and Swimming Birds.*

1. Black-vented Stormy Petrel 2. Mandarin Duck (male). 3. Scarlet Ibis. 4. Great Northern Diver. 5. Common Flamingo. 6. Red-breasted Goose. 7. King Penguin.



### *Land Birds.*

1. Lanner Falcon. 2. Stockdove. 3. King Bird of Paradise. 4. Golden Pheasant 5. Hoopoe.  
6. Great Bustard. 7. Rufous Tinamou. 8. Parrot *Aprosmictus eympygus*, E. Australia.

breathing during flight. Many birds undertake long and hazardous migratory flights to ensure a supply of food when the climatic conditions make a sojourn in the breeding area prohibitive. The remarkable development of the brain, manifesting itself in the complex emotions of courtship, and all the functions associated with the care of offspring (*e.g.*, nest-building), and in migration and other habits, makes some orders of the Carinatae rank with the mammals, and thus with the highest evolutionary phases of the animal kingdom.

A segregation of Carinatae, over 11,000 species into 14 orders, introduced by Dr. Gadow, seems most advantageous. The extinct (cretaceous) Ichthyornithes have biconcave vertebræ and teeth in sockets, and were able to fly well. The aquatic Colymbiformes with straight bill include the grebes and divers. In the penguins, or Sphenisciformes, the wings are transformed into flippers for swimming. Flying seabirds like albatrosses and petrels belong to the order Procellariiformes; the gannets, cormorants, frigate-birds, and pelicans, however, as well as wading birds like storks, ibises, and flamingos, are grouped as Ciconiiformes. Screamers, ducks, geese, and swans are included in Anseriformes. The Falconiformes are diurnal birds of prey and excellent fliers, and include falcons, hawks, eagles, vultures, condors, and others. Of the small Central and S. Amer. order Tinamiformes, the tinamou, a partridge-like game-bird, is the best known representative. Fowls, pheasants, quails, and similar birds consti-

tute the order Galliformes, with the curious hoatzin of Northern S. America, whose unhatched chick has clawed fore-limbs, showing reptilian affinities. Wading birds, like cranes, rails, bustards, and bitterns, are Gruiformes. The large order Charadriiformes includes such different types as plovers, pigeons, auks, and gulls, and the extinct dodo of Mauritius. Parrots and cuckoo-like birds belong to the Cuculiformes. A large order with most varied representatives is the Coraciiformes, comprising ravens, owls, humming-birds, toucans, woodpeckers, kingfishers, and others. The most heterogeneous order of all is the Passeriformes, in some of which the emotional life finds its most highly developed and beautiful expression; it includes the birds of paradise, bower, weaver, and tailor birds, and all the singing birds like finches, thrushes, nightingales, etc. See ANIMAL KINGDOM; ORNITHOLOGY; EVOLUTION; MIGRATION.

Kirkman, *The British Bird Book*; A. Newton, *A Dictionary of Birds* (London, 1896); J. E. Harting, *Handbook of British Birds* (new ed., 1901); Hartert and others, *A Hand List of British Birds* (1912); Headley, *The Flight of Birds* (1912); Pycraft, *A History of Birds* (1910).

**Bird's-eye.** (1) Flower with bright centre, as germander speedwell and mealy primrose. (2) Name given to cut tobacco, including ribs of leaves.

**Bird's-eyes,** in timber, nodules that appear in planed wood; caused by lateral shoots which have become embedded by further growth of main stem.

**Bird's-foot**, term applied to genus (*Ornithopus*) of Leguminosæ; not common in this country; so named on account of arrangement of jointed pods.

**Bird's-foot Trefoil** (*Lotus corniculatus*), herb of Leguminosæ (see BIRD'S-FOOT); eighty widely distributed species; shoot resembles clover; flowers yellow, in groups of four or five; pods arranged like digits of straight-toed bird. See LOTUS.

**Birds of Paradise** (PARADISEIDÆ), closely allied to crows, inhabiting New Guinea and Malay Archipelago; magnificent plumage of adult males evolved by sexual selection; females have plain plumage for protection.

**Birdwood**, SIR GEORGE CHRISTOPHER MOLESWORTH (1832-1917), Anglo-Indian official and author, had a unique place among Anglo-Indians by reason of his close sympathy with the Ind. people and the great personal influence he had over them; his bust in Bombay is regarded as a shrine; was ed. of Bombay *Saturday Review*, and author of many books on India.

**Birdwood**, SIR WILLIAM RIDDELL (1865- ), Brit. soldier; served in several Ind. expeditions and S. African War, and was military secretary to Lord Kitchener. He won fame in the Gallipoli Campaign (1915) as the 'hero of Anzac,' and commanded the Australian and New Zealand Army Corps, and later the 5th Army in France. He received a baronetcy and grant of £10,000 (Aug. 1919). Appointed to Northern Command in India (1920).

**Biré**, JEAN BAPTISTE EDMOND (1829- ), Fr. writer; pub.

*Victor Hugo et la Restauration* (1869), *Dialogues des Vivants et des Morts* (1872), *Paris pendant la Terreur* (1890).

**Biretta**, a square cap of different colours according to rank, worn on state occasions by R.C. ecclesiastics; white for pope, red for cardinals, purple for bishops, and black for lower clergy.

**Birger**, JARL OF BJÄLBO (d. 1266), Swed. statesman and legislator; founded Stockholm.

**Birgus**, or PALM-CRAB, a tree-climbing hermit crab of coral islands of Indian and Pacific Oceans; a land form.

**Birjand**, tn., Khorassan, Persia (32° 53' N., 59° 10' E.); has several mosques; good caravan-saries. Pop. 14,000.

**Birkbeck**, GEORGE (1776-1841), Eng. physician, prof. of natural philosophy, Anderson's Coll., Glasgow; afterwards settled in London, and founded the London Mechanics' Institute (pioneer of many such), later called Birkbeck Institution, and now known as Birkbeck College; it has day and evening classes, with extensive curriculum.

**Birkdale**, tn., Lancashire, England (53° 37' N., 3° W.); large hydropathic. Pop. 15,900.

**Birkenfeld**. (1) Principality, dependent on republic of Oldenburg, Germany; hilly, well-wooded; agriculture. Area, 312 sq. m.; pop. 50,500. (2) Cap. of above (49° 38' N., 7° 10' E.); breweries; ruins of castle (11th cent.). Pop. 2,300.

**Birkenhead**, seapt., Cheshire, England (53° 24' N., 3° 1' W.); has ferry and tunnel under Mersey connecting it with Liverpool; dates from 12th cent.;



became borough in 1877; large shipbuilding works, iron foundries, breweries, flour mills; splendid docks (water area 165 ac.), first of which was opened 1847; exports coal, etc.; fine public buildings, including town hall; library; large abattoirs. Pop. 150,000.

**Birkenhead**, Brit. troopship, wrecked in Simon's Bay, S. Africa (Feb. 26, 1852), when 454 of crew and troops perished; gallantry of soldiers most distinguished, and subject of eulogies and poems.

**Birkenhead**, LORD (FREDERICK EDWIN SMITH), (1872- ), Lord Chancellor of Great Britain since 1919; educated Birkenhead School and Wadham Coll., Oxford; called to bar at Gray's Inn (bencher, 1908), and joined northern circuit; Conservative candidate for Scotland Div. of Liverpool (1903-4); elected for Walton Div., Liverpool (1906), which he continued to represent until 1919; prominent in the Ulster movement against Irish Home Rule (1914); knighted on becoming solicitor-general (1915); attorney-general (1915-19); baronet (1918). During the Great War he was administrator of the Press Censorship, and later saw service in France with the Indian Corps. Author of several books on international law, *My American Visit* (1918), *The Indian Corps in France* (1918).

**Birmingham**, city, munic., parl., and co. bor., Warwickshire, England (52° 28' N., 1° 54' W.), with suburbs extending into Staffordshire and Worcestershire; the greatest Midland manufacturing town, 97½ m. S.E. of Liverpool, 112 m. by rail N.W. of London.

Town is irregularly laid out; some fine streets and public buildings near centre, including town hall, of Gr. arch. with Corinthian pillars, where triennial musical festivals are held, art gallery, council house, etc. Univ. was established in 1900, and there are various other educational institutions, including technical school, school of art, and grammar school founded and endowed by Edward VI. Birmingham is bishopric of Anglican, and an archbishopric of R.C. Church; cathedral built in 1839-41. There are several large hospitals and charitable institutions; numerous statues. Municipal administration (lord mayor) very active and progressive.

Town was in existence before Norman Conquest, and is mentioned in *Domesday Book*; it later gave its name to resident family, who held manor here for about three centuries; supported Roundheads in Civil War; suffered attack by Prince Rupert, who captured and sacked it; in reign of Charles II. was ravaged by the plague. Serious riots have thrice occurred, against Unitarians in 1791, in favour of Chartists in 1839, and against Irish in 1866; enfranchised in 1832; became city in 1889; was the stronghold of the Tariff Reform movement, dominated by the personality of Joseph Chamberlain, who had the chief share in the development of modern Birmingham. Manufactures include all kinds of metal work, founding, rolling, stamping, plating, drawing; making of machinery, iron roofs, girders, gasometers; steam, gas, and hydraulic engines; railway plant, electric apparatus, tools,

guns, rifles, bells, electroplate, watches, clocks, glass, chemicals, ammunition, swords, jewellery, coins, buttons, buckles, lamps, toys, pins, steel pens, nails, screws, locks. At the gun proof-house about 600,000 gun barrels are tested annually. Supplied large quantities of munitions during Great War. Railways run in all directions; canals to Severn, Thames, Mersey, and through Potteries to Trent. Pop. 840,200.

**Birmingham**, city, Alabama, U.S. (33° 32' N., 86° 49' W.); important iron and steel manufactures; cotton; centre of agricultural trade. Pop. 132,700.

**Birmingham**, Brit. protected cruiser; sank (Aug. 9, 1914) the U 15, the first Ger. submarine destroyed in the Great War; engaged in Dogger Bank and Jutland battles.

**Birmingham**, G. A. See under HANNAY, JAMES OWEN.

**Birnam**, vil. and hill, Perthshire, Scotland (56° 42' N., 3° 35' W.); remains of 'Duncan's Camp'; frequented by tourists.

**Birney**, JAMES GILLESPIE (1792-1857), Amer. anti-slavery politician, son of a slave-owner of Kentucky; promoted law for allowing services of counsel to slaves tried by jury; freed his own slaves (1833); joined Amer. Anti-Slavery Soc. (1834); founded an anti-slavery newspaper.

**Biron**. (1) ARMAND DE GONTAUD, BARON DE (1524-92), Fr. soldier and favourite of Henry III.; marshal of France (1576); joined Henry of Navarre (1589), and fell at siege of Epernay. (2) CHARLES DE GONTAUD, DUKE OF (1562-1602), admiral and marshal of France; beheaded for treason.

**Birr**. See PARSONSTOWN.

**Birrell**, AUGUSTINE, Rt. Hon. (1850- ), Eng. barrister, essayist, and Liberal politician; Quain prof. of law, Univ. Coll., London (1896-9); entered Parliament (1889); president of Board of Education (1905); brought in Education Bill, which was abandoned; secretary for Ireland (1907-16); under his régime Irish Univ. Act, Irish Land Act, and Home Rule Act were carried; resigned on outbreak of Dublin rebellion (Easter 1916); Lord Rector Glasgow Univ. 1911. A witty speaker, notable for 'birrellisms'; an essayist of delightful style; author of *Obiter Dicta* (1st and 2nd series), *Men, Women, and Books*, *Life of Charlotte Brontë*, studies of *Hazlitt* and *Marvell*, *In the Name of the Bodleian*, and *Frederick Locker-Lampson* (1920).

**Birth**, the act of being born, or bringing forth a child. In Britain the father or mother of every child born alive, or in default of them, the occupier of the house, or any person present at the birth or having charge of the child, is compelled to give particulars regarding the birth to the registrar within forty-two days, and to sign the register in presence of the registrar. In addition, under the Notification of Birth Act (1907), which may be adopted and enforced by local authorities, the father and any person in attendance on the mother (medical practitioner or midwife) must notify the medical officer of health of the district of the birth within thirty-six hours, in order that he may take steps for the prevention of infant mortality. A mature child at birth is, on an average, 18 in. in length,

and 6 to 7 lb. in weight, but quite normal infants may differ widely from these figures. See **BABY**; **REPRODUCTION**; **VITAL STATISTICS**.

**Concealment of Birth**, in Scotland, and concealment of birth by secret disposal of the dead body of the child, in England, is in both cases a misdemeanour punishable by not more than two years' imprisonment.

**Bisaccia**, comm., Avellino, Italy (41° 2' N., 15° 22' E.); has coolest climate in Italy; the vine is grown in sheltered places. Pop. 7,500.

**Bisacquino**, tn., Palermo, Sicily (37° 42' N., 13° 14' E.); agates and jasper. Pop. 10,500.

**Bisahir**. See **BUSSAHIR**.

**Biscay**. See **VISCAYA**.

**Biscay**, BAY OF, bay of Atlantic Ocean (45° 30' N., 4° W.); formed by coasts of France and Spain; shores rocky and inhospitable; subject to severe storms, owing to exposure to prevailing N.W. winds and opposition of its currents to tides.

**Bisceglie**, seapt., episc. see, S. Italy (41° 15' N., 16° 29' E.); ruins of Norman castle; 12th cent. cathedral. Pop. 32,000.

**Bischof**, KARL GUSTAV (1792–1870), Ger. chemist and geologist; greatly improved the safety lamp; made important contributions to geol.; wrote *Lehrbuch der chemischen und physikalischen Geologie* (1847–54).

**Bischoff**, THEODOR LUDWIG WILHELM (1807–82), Ger. biologist; prof. of anatomy successively at Heidelberg, Giessen, and Munich; specialized in comparative embryology; wrote *Das Hirngewicht des Menschen*, etc.

**Biscuit**, in pottery, name given

to porcelain and other pottery after first firing. See **POTTERY**.

**Biscuits** ('twice baked'), crisp thin cakes, manufactured chiefly from flour, with salt, sugar, butter, etc. Dough passes from kneaders to rollers, whence sheets of requisite thickness proceed over endless conveyor bands to punching machine, then through long baking ovens to packers.

**Bishnupur**, anc. cap. of Bankura dist., Bengal, India (23° 5' N., 87° 20' E.); rice, oilseeds, lac, etc.; manufactures tussore silk and fine cottons. Pop. 20,500.

**Bishop**, an official of the Christian Church in all those branches that have maintained the Catholic tradition and some others. The early history of **EPISCOPACY** is involved in controversy. The bishop has certain peculiar functions in the Anglican, Roman, and Eastern Churches. He alone can confirm, ordain priests and deacons, anoint monarchs, and consecrate buildings. A bishop is consecrated by an archbishop and other bishops, who lay their hands upon him. In the Anglican Church, though the chapter nominally elects, the appointments to Eng. bishoprics are really made by the prime minister, as responsible to the crown. The last half-cent. has seen an increase of sees in England, and *suffragan* (i.e., assistant) bishops have been revived.

**Bishop**, SIR HENRY ROWLEY (1786–1855), Eng. composer; was successively musical director at Covent Garden, Drury Lane, and Vauxhall; subsequently prof. of music at Edinburgh and Oxford; knighted 1842, being the first musician to receive that honour;

chiefly remembered by settings of Shakespeare's songs, and popular ballads such as 'My pretty Jane,' 'Home, sweet Home,' and 'Should he Upbraid.'

**Bishop, ISABELLA**, née BIRD (1832-1904), Eng. traveller and author, whose powers of observation were great, and whose books are of high value to travellers; was deeply interested in Christian missions, and founded numerous hospitals and orphanages in China. Among her works are *The Yangtze Valley* (1899), *Pictures from China*, etc. *Life* by Stoddart (1906).

**Bishop, WILLIAM AVERY** (1898-), Canadian airman; major R.F.C.; officially credited with bringing down seventy-two Ger. machines, and unofficially with over a hundred. Awarded v.c.

**Bishop Auckland**, mrkt. tn., co. Durham, England (54° 40' N., 1° 40' W.); stands in S. Durham coalfield, and majority of inhabitants are engaged in mines and in iron and engineering works. Auckland Palace or Castle, the residence of the Bishop of Durham, was founded in reign of Edward I. Pop. 13,800.

**Bishops, TRIAL OF THE SEVEN.** The protest of Archbishop of Canterbury and six other bishops against Declaration of Indulgence (April 1688) was followed by their arrest at instigation of James II., trial, and acquittal (June 30) amidst rejoicings of nation.

**Bishop's Ring**, a halo extending from 20° to 30° from the sun, first observed by Bishop at Honolulu in 1883, after eruption of Krakatoa; colour varied from blue-white in centre, shading into reddish brown; caused by

minute particles of dust ejected by volcano: reached maximum in 1884 and disappeared in 1886. Similar effect seen after eruption of Mont Pelée in 1902.

**Bishop's Stortford**, par. and mrkt. tn., Hertfordshire, England (51° 52' N., 0° 10' E.); has maltings, breweries, brickfields, and limekilns. Cecil Rhodes was a native. Pop. 9,200.

**Bishop's Waltham**, tn., Hampshire, England (50° 57' N., 1° 13' W.); ruins of Waltham Palace (1135) lie to s.w. Pop. 4,600.

**Bitun**, vil., Persia (34° 23' N., 47° 27' E.), on main highway between E. and W. Along this route from Hamadan Darius III. retreated before Alexander, as did Turks before Russians during Great War (March 1917).

**Biskra**, tn. and oasis, Algeria (34° 55' N., 5° 36' E.), comprising number of small villages, separated by olive groves and date palms; genial winter climate; popular resort; captured by French (1844). Pop. 7,500.

**Biskupitz**, vil., Oppeln dist., Silesia, Prussia (50° 19' N., 18° 49' E.); has important coal mines and iron works (Borsigwerk). Pop. 15,200.

**Bisley**, vil., Surrey, England (51° 19' N., 0° 38' W.): its common is meeting-place of the National Rifle Association, whose competitions, extending over a fortnight in July, attract shots from all parts of Brit. Empire. The King's Prize (£250 and gold medal) is the chief event.

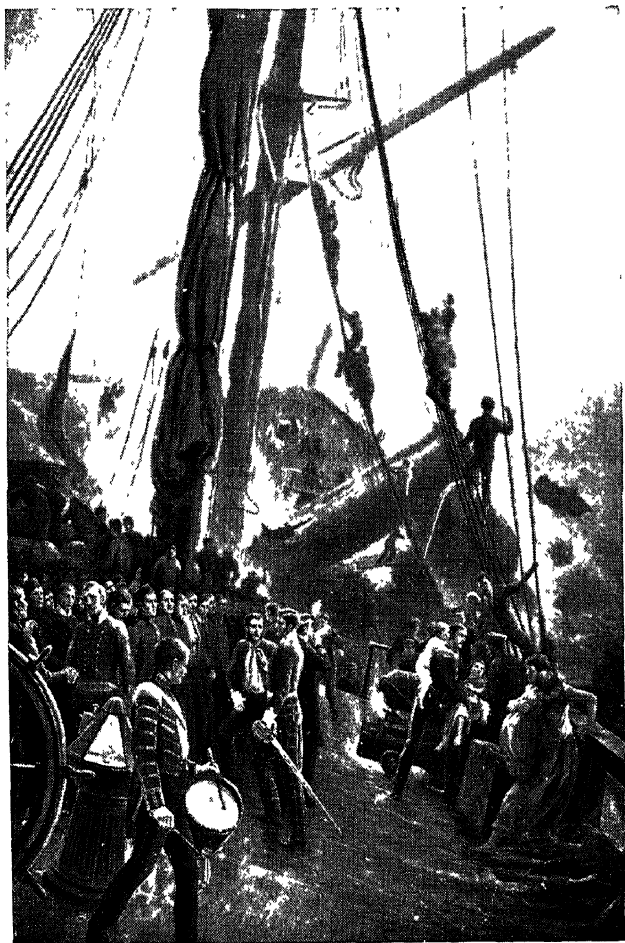
**Bismarck**, cap. of N. Dakota, U.S. (46° 48' N., 100° 47' W.), on l. bk. of Missouri, which is navigable 1,200 m. above city. Industries include flour milling,

creameries, string-making, and machine works. Pop. 5,400.

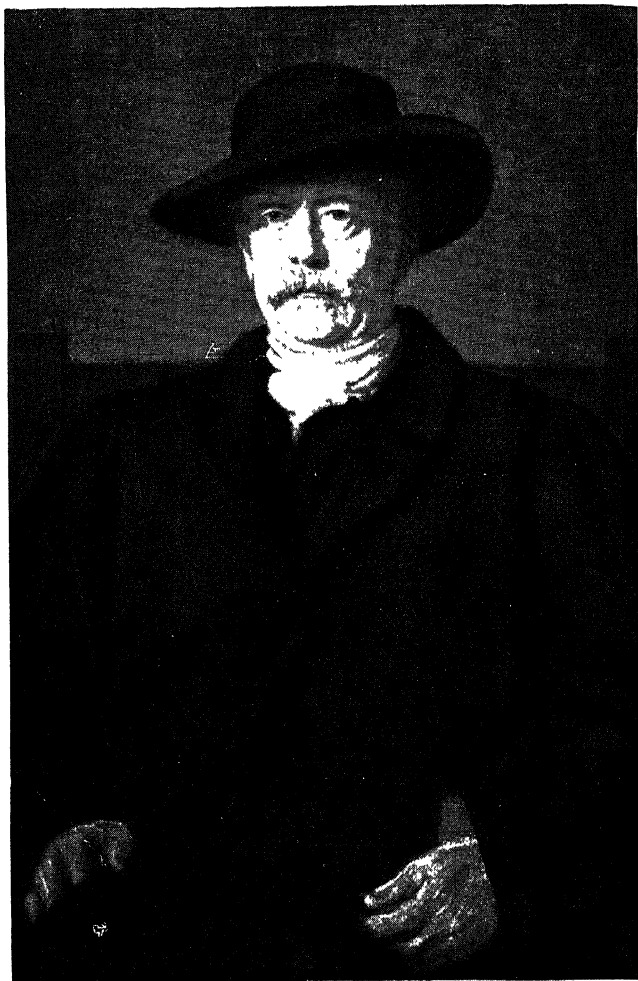
**Bismarck, HERBERT, PRINCE** (1849-1904), eldest son of Prince OTTO VON BISMARCK; served on several diplomatic missions and was secretary of state for foreign affairs (1886-90); resigned office along with his father; supported imperial policy in Reichstag from 1893 till his death.

**Bismarck, OTTO EDUARD LEOPOLD, PRINCE VON** (1815-98), or, more accurately, PRINCE VON BISMARCK-SCHÖNHAUSEN, the statesman more responsible than any other man for the unification of the Ger. states and the foundation of the Ger. Empire. Born at Schönhausen, Brandenburg; admitted to public service (1835); undertook management of family estates in Pomerania (1839); appointed Deichhauptmann (1846); represented lower nobility of his dist. in Estates-general (1847); helped to found the *Kreuzzeitung* (organ of Prussian monarchical party); sat for Brandenburg (1849); Prussian representative in Federal Diet (1851-9); discovered its subservience to Austria, and became convinced that only by 'blood and iron' could Germany be welded into a national state. Ambassador at Petrograd (1858), at Paris (1862), he was appointed prime minister (Sept. 1862), and ruled for four years without a budget, depending solely for his position on the king's confidence. He aided Russia during Polish rebellion (hence regarded as enemy of liberty); opposed popular Augustenburg claims to Schleswig and Holstein (1863); acting with Austria, he went to war with Denmark.

He then proceeded with his long-nourished policy of humiliating Austria as only way of securing Prussian ascendancy in Germany. The war of 1866 left Prussia supreme in Germany; thus Bismarck finished the work of Frederick the Great; the settlement of 1866 was his part of it. He became sole responsible minister in confederation of N. Ger. states, and pursued a Nationalist policy. After 1870 he absolutely controlled foreign policy and played foremost rôle in events leading up to FRANCO-GERMAN WAR. He fostered in Germany the ideal of the strong, effective man, encouraging historians like Mommsen, who preached Cæsarism, and new school of philosophers (of whom Nietzsche was leader) whose standard is merely the amount of energy a man possesses; this exercised enormous influence on Ger. thought; estranged from Ultramontanist Conservatives (1866); opposed claims of R.C. hierarchy (1872-9). He carried through important commercial reforms. After 1871 he aimed at a league of the three Emperors of Germany, Austria, and Russia, but conflict of interest between Russia and Austria broke the scheme. As an 'honest broker' presided at Congress of Berlin (1878), which laid down settlement of Near East. In 1879 he forced on his sovereign alliance with Austria, Italy transforming Dual into Triple Alliance. In 1884, however (renewed in 1887), Bismarck, behind the back of Austria, concluded 'reinsurance treaty' with Russia, the existence of which was not revealed till



THE LOSS OF THE 'BIRKENHEAD.'  
(From an engraving after Honey. By permission of  
Messrs. H. Graves and Co., Ltd.)



PRINCE BISMARCK.  
(From the picture by Franz von Lenbach.)

1896. In the same year he suddenly but reluctantly embarked on programme of colonial expansion. After emperor's death and brief reign of Emperor Frederick, Bismarck was 'dropped' by William II. (1890). He profoundly distrusted the inexperience and impulsiveness of the new sovereign. Until his death he resided mainly at his country estate of Friedrichsruh.

See his *Memoirs* (trans. by A. J. Butler under title *Bismarck: the Man and the Statesman*, 1898); and Sir A. W. Ward's *History of Germany* (vols. ii. and iii., 1917-18).

**Bismarck Archipelago.** See NEW BRITAIN ARCHIPELAGO.

**Bismarck Mountains**, a N.W. to S.E. range in S.W. of what was formerly Ger. New Guinea (between 5° 50' S., 145° 20' E., and 6° 42' S., 145° 42' E.); some peaks are perpetually ice-capped. Gold has been found in range.

**Bismuth** (Bi=208.5), brittle metal of crystalline texture, white or yellowish tinged with faint red; sp. gr. 9.8; m.p. 268° C; expands on solidification; found native in Cornwall, France, Germany (especially Saxony), Liberia, etc. Bismuth exists combined with oxygen, carbonic acid, sulphur, and tellurium; readily forms alloys. 'Fusible metal' is formed of one part lead, one part tin, two parts bismuth. The derivatives of bismuth, such as bismuth nitrate, bismuth subnitrate, etc., are used in medicine, in glass manufacture, and as cosmetics.

**Bison.** See OX GROUP.

**Bissa Bol**, Ind. name of gumm-resin got from *Commiphora erythraea*, a large tree of W. Brit. Somaliland, where it is known as

*habbak haddi*; chief source of oil of opopanax of commerce.

**Bissagos Islands**, archipelago of about thirty islands off Senegambia, W. Africa, belonging to Portugal; crossed about centre by 11° 20' N., 16° W. Largest of group is Orango.

**Bisschop**, CHRISTOFFEL (1828- ), Dutch painter; important works, *Sunshine in Heart and Home*, *The Morning Sun*, *Winter in Friesland*.

**Bissen**, HERMANN WILHELM (1798-1868), Dan. sculptor, of school of Thorwaldsen; director, Copenhagen Academy of Arts.

**Bissing**, MORITZ FERDINAND, BARON VON (1844-1917), Ger. general, the notorious military governor of occupied Belgium (1914-17); at first adopted a conciliatory policy, later one of ruthless violence; associated with the death of Edith Cavell (1915), and with the deportation of Belgians. See *Cardinal Mercier's Own Story* (1920).

**Bissolati**, LEONIDA (1857-1920), Ital. Socialist and statesman, first president of League of Nations, editor of Socialist paper *Avanti* (1892); member of Chamber of Deputies from 1897 till death. On split in Socialist party (1911) cast in lot with Reformist wing, of which he became leader; advocated intervention in Great War; was member of government (1916-18). His opposition to Baron Sonnino on question of Dalmatia compelled his retirement (1918).

**Bisson**, ALEXANDRE (1848-1912), French dramatist, whose comedies, *Les Surprises du Divorce*, *Le Député de Bombignac*, etc., had great success.



**Bistritza.** (1) Vil. and riv., S. Serbia ( $40^{\circ} 59' \text{ N.}, 21^{\circ} 25' \text{ E.}$ ). The vil. lies 4 m. s. of Monastir, and the riv., a small trib. of the Cerna, flows E. across the Monastir plain. The position formed the second line of the Bulgarian defences before Monastir, taken by the Allies (Nov. 17, 1916). (2) Riv., E. Galicia, flows N. from the Carpathians past Stanislaw and falls into the Dniester S.E. of Halicz ( $49^{\circ} 3' \text{ N.}, 24^{\circ} 51' \text{ E.}$ ). The Russians made a stand here during their great retreat of 1915, but were forced back; they recovered Stanislaw in Aug. 1916, and in the succeeding months big battles were fought for the possession of Halicz. (3) Riv., government of Lublin, Poland, flows into the Wieprz ( $51^{\circ} 20' \text{ N.}, 22^{\circ} 43' \text{ E.}$ ), a trib. of the Vistula. The Russians in the retreat of 1915 delivered a counter-attack here before Lublin and Cholm, taking 11,000 prisoners (July 5-11). Early in Aug. they were compelled to withdraw. (4) Riv., Bukovina and Moldavia, trib. Sereth, which it joins at  $46^{\circ} 28' \text{ N.}, 26^{\circ} 55' \text{ E.}$ ; known as 'golden Bistritza' because of its auriferous sands. In Jan. 1917 the Russians advanced E. of the river, but were subsequently driven back.

**Bisulphite.** See under SULPHUROUS ACID.

**Bithur**, tn., United Provinces, India ( $26^{\circ} 37' \text{ N.}, 80^{\circ} 16' \text{ E.}$ ); much frequented by Buddhist pilgrims; captured by Havelock (1857). Pop. 14,000.

**Bithynia**, in classic times, prov. and kingdom of Asia Minor ( $39^{\circ} 50'-41^{\circ} 53' \text{ N.}, 28^{\circ} 27'-32^{\circ} 52' \text{ E.}$ ); caps. were Nicomedia

and Nicæa; subdued by Lydia, 6th cent. B.C.; afterwards part of Persian empire; independent in 3rd cent. B.C.; became Roman prov. 74 B.C.

**Bitinga Rubber**, obtained from turnip-shaped roots of *Raphionacme utilis*, found on sandy plains of Portuguese W. Africa; sliced roots are exposed to sun to coagulate exuded latex.

**Bitlis**, vilayet and tn., Turk. Armenia ( $38^{\circ} 25' \text{ N.}, 42^{\circ} 6' \text{ E.}$ ); scene of Armenian massacres (1915); manufactures red cotton cloth. Pop. 40,000.

**Bitonto**, tn. and episc. see, Bari, Italy ( $41^{\circ} 7' \text{ N.}, 16^{\circ} 41' \text{ E.}$ ); has mediæval walls, a fine palazzo, Romanesque cathedral, and theological seminary. Wine and olive oil are produced. Pop. 30,600.

**Bitterfeld**, tn., Saxony, Prussia ( $51^{\circ} 38' \text{ N.}, 12^{\circ} 20' \text{ E.}$ ); founded by Flemings (1153); machinery. Pop. 14,600.

**Bitter Lakes**, GREAT and SMALL, (1) ( $30^{\circ} 13' \text{ N.}, 32^{\circ} 33' \text{ E.}$ ); 6 m. N. of Suez, Egypt; (2) ( $30^{\circ} 20' \text{ N.}, 32^{\circ} 24' \text{ E.}$ ). The two lakes form about 23 m. of the Suez Canal.

**Bittern** (*Botaurus stellaris*), marsh-loving bird, related to heron and stork; feeds on fish; found throughout the Old World, but no longer breeds in Great Britain; has booming cry.

**Bitters**, group of vegetable drugs; stimulate secretion of saliva and so assist appetite and digestion; also supposed to stimulate gastric secretion in stomach; bitter principle of hops important in beer.

**Bitter Spar.** See DOLOMITE.

**Bittersweet** (*Solanum dulcamara*), climbing plant of potato

genus; purple flowers and bright red poisonous berries; often confused with deadly nightshade, which belongs to different genus, *Atropa* (see *BELLADONNA*).

**Bitterwood.** See *QUASSIA*.

**Bitumen**, term for mineral compounds of carbon and hydrogen, including naphtha, petroleum, pitch, and especially asphalt and its forms.

**Bitzius**, ALBRECHT (1797–1854), Swiss novelist, better known under pen-name of 'Jeremias Gotthelf'; he wrote novels dealing with Bernese peasant life.

**Bivalves.** See under *LAMELLIBRANCHIATA*.

**Biwa, LAKE**, Omi, Japan (35°–35° 33' N., 135° 56'–136° 17' E.); largest in Japan (c. 40 m. long).

**Bixa Orellana**, small tree with broad heart-shaped pointed leaves and clusters of rose-coloured flowers; related to rock-rose; fruit, a prickly capsule with seeds embedded in red pulp, from which is derived the *ANNATTO* of commerce.

**Bixschoote**, vil., Belgium (50° 57' N., 2° 54' E.); scene of heavy fighting in Great War; recovered, lost, and recaptured by French in first, second, and third battles of Ypres respectively.

**Biyala**, BIALAH, or BIELAH, tn., Gharbieh prov., Egypt (31° 11' N., 31° 12' E.), on railway between Damietta and Kalin. Pop. 10,000.

**Biysk**, or BISK, tn., Siberia (52° 35' N., 85° 15' E.). Near the town is pass over Altai Mts. into China. Pop. 17,000.

**Bizerta**, fort. seapt., Tunis, N. Africa (37° 11' N., 9° 52' E.); held by French since 1881; two harbours, one at each end of

sea canal debouching into Lake Bizerta (31 m. in circuit); fisheries. Pop. 10,000.

**Bizet**, GEORGES, pseudonym of Alexandre Cesar Leopold (1838–75), Fr. composer; gained the Grand Prix de Rome (1857); experienced many struggles and privations during his musical career; produced several operas, *Les Pêcheurs de Perles* (1863), *La Jolie Fille de Perth* (1867), and *Djamileh* (1872), which achieved little success, and the charming incidental music to Daudet's *L'Arlésienne* (1872). His masterpiece, *Carmen*, produced in 1875, was received with acclamation; it has exercised considerable influence on lyric opera, and has retained its popularity.

**Bjerregaard**, HENRIK ANKER (1792–1842), Norwegian poet; author of Norwegian national anthem, *Sønner af Norge*.

**Björneborg**, seapt., Finland (61° 29' N., 21° 46' E.); textiles, timber, fisheries. Pop. 17,200.

**Björnson**, BJÖRNSTJERNE (1832–1910), Norweg. poet, novelist, and dramatist; son of a Lutheran pastor; commenced his career as a journalist. Later he began to write novels, many of which have enjoyed a European reputation. His first work was *Synnøve Solbakken* (1857), followed by *Arne* (1858), *A Happy Boy* (1860), *The Fisher Maiden* (1868), and numerous others. His plays include *Between the Battles*, *Lame Hulda*, *Sigurd the Bastard*, *Sigurd the Crusader*, *Mary Stuart*, *The Newly Married*, *Beyond our Powers*, ranging from poetic tragedy to comedy and social drama. In 1870 he issued his *Poems and Songs* and *Arnljot*

**Gelline**, including his famous ode *Bergliot*. He was awarded the Nobel prize for literature in 1903. His later work was used as the medium for the propagation of his Radical, social, and religious views. Much of his work entitles him to share with his fellow-countryman, Ibsen, a foremost place in European literature.

Brandes, *Ibsen and Björnson*; *Works*, preface by Gosse (1895).

**Black**, ADAM (1784–1874), Scot. politician and publisher, of Edinburgh, founder of the firm of A. and C. Black, which acquired (1827) the copyrights of the *Encyclopædia Britannica* and Scott's Waverley Novels; twice lord provost, and M.P. for Edinburgh (1856–65).

**Black**, HUGH (1868– ), Scot. theologian and preacher; colleague of Dr. Alexander Whyte in St. George's U.F. Church, Edinburgh (1896–1906); he has been prof. of practical theol. at Union Theological Seminary, New York, since 1906.

**Black**, JOSEPH (1728–99), Scot. chemist and physician; lecturer on chem., Glasgow Univ. (1756), prof., Edinburgh (1766); did pioneer work on carbon dioxide, and propounded theory of 'latent heat,' which gave first impulse to Watt's improvements on the steam-engine (1761).

**Black**, WILLIAM (1841–98), Scot. novelist, of Glasgow; excelled in descriptions of W. Highland scenery; pub. *A Daughter of Heth*, *A Princess of Thule*, *Macleod of Dare*, and many other novels; wrote also *Goldsmith* in 'English Men of Letters'; lighthouse (1901) to his memory at Duart Point (Sound of Mull).

**Blackband**, name given by Scottish miners to ironstone of intensely dark colour, mined in thin seams in certain coalfields, and formerly much used as source for iron; also a soft kind of coal.

**Blackberry**. See BRAMBLE.

**Blackbird**. See THRUSH.

**Blackbirds**, FIELD OF, or KOSOVO POLIE, plateau, Serbia, so called because of number of these birds which frequent it. Plateau of Kossovo is Serbia's place of destiny. Here the Turks overthrew the Serbian Empire (1389), and here, in 1448, John Hunyady of Hungary was defeated and captured by Turks and Serbians. Here also the Serbians made their last stand against Austro-German armies in Nov. 1915; crossed by Serbians during final victorious advance of Allied armies in Sept. 1918.

**Blackbuck**, common antelope of India; male has shining brown-black coat and horns from 16 to 25 in. long.

**Black-bulb Thermometer**, used for experiments on radiation; early form of what is now called a PYRHELIOMETER.

**Blackburn**, parl., munic., and co. bor., Lancashire, England (53° 45' N., 2° 30' W.); centre of Lancashire cotton spinning and weaving; birthplace of Hargreaves, who invented spinning-jenny (1764). Pop. 133,000.

**Blackburn**, COLIN BLACKBURN, BARON (1813–96), Brit. judge; made a lord of appeal (1876), and noted as a high authority on common law; author of the *Law of Sales*.

**Blackburn**, JOSEPH HENRY (1842– ), Brit. chess champion; born in Manchester.

**Blackburne**, FRANCIS (1782–1867), Lord Chancellor of Ireland (1852–66): strong opponent of O'Connell; helped to prepare a code of general orders for the Court of Chancery.

**Blackbutt**, name given to timber of several species of eucalyptus in Australia; used for railway sleepers, telegraph poles, etc.

**Blackcap** (*Sylvia atricapilla*), one of Warbler division of family Turdidae, a small Brit. song-bird; resident in N.W. Africa, Mediterranean shores, etc.

**Blackcock**, or **HEATHCOCK**, more correctly the 'black grouse' (*Tetrao tetrix*); native of parts of Europe; wholly absent from Ireland, and seems to be decreasing in Scotland and England.

**Black Country**, Eng. mining and manufacturing dist. in S. Staffs (52° 30' N., 2° W.), stretching from Birmingham to Wolverhampton in one direction, and Walsall to Dudley in another. See STAFFORDSHIRE.

**Black Death**. See PLAGUE.

**Black Earth**, fertile dark loamy soil deposit, resembling Loess, covering large areas in S. Russia; similar kinds of soil are found in Siberia and Texas.

**Blackfeet**, a confederacy of warlike Amer. Indians of Algonquin stock, who formerly roamed over territory between the N. Saskatchewan R. and the Missouri; remnant now settled in three reservations in Alberta, Saskatchewan, and Montana.

**Black Flux**, composed of three parts of argol and one part of potassium nitrate; a substance used in assaying to extract pure metal from ores, the flux forming a slag with impurities.

**Black Forest**, or SCHWARZWALD, mountainous dist., Baden and Württemberg, Germany (48° 20' N., 8° 15' E.), near Rhine valley highest peak, Feldenberg, 4,900 ft.; extensive forests; picturesque scenery; tourist resort; cattle, clocks, toys. Area, 1,844 sq. m.; pop. 571,000.

**Black Friars**. See DOMINICANS.

**Black Friday**, May 11, 1866 (England), Sept. 11, 1869, and Sept. 19, 1873 (U.S.), days of financial panic: first due to failure of Overend and Gurney; second to attempt by Fisk and Gould to corner gold market; third to a great financial crash in the New York Stock Exchange.

**Black Grouse**. See BLACKCOCK.

**Black Hand** (Span. *mano negro*), name of Span. and Ital. criminal secret societies; the latter have within recent years committed outrages in U.S., and have been opposed by White Hand societies.

**Blackheath**, a common now 267 ac. in extent (51° 28' N., 0°), partly in bor. of Greenwich and partly in Lewisham; camping place of Danes (1012), Wat Tyler (1381), Jack Cade (1450), etc.; at one time a noted haunt of highwaymen.

**Black Hole**. See CALCUTTA.

**Blackie**, JOHN STUART (1809–95), Scot. scholar and writer; prof. of Greek, Edinburgh Univ. (1852–82); pub. *Homer and the Iliad* (1866), *Language and Literature of the Scot. Highlands* (1876), *Lay Sermons* (1881), and volumes of verse.

**Blacking**, substance used for producing a polish on boot leather; contains powdered ivory or bone black, oil, vinegar, sugar, gum-arabic, and sulphuric acid;

introduced into Britain from Paris in reign of Charles II.

**Black Isle**, peninsula (20 m. by 12 m.) between Beaulieu and Moray Firths and Cromarty Firth, Scotland ( $57^{\circ} 35' \text{ N.}$ ,  $4^{\circ} 14' \text{ W.}$ ); agriculture, quarrying, fisheries.

**Blacklead**. See CARBON.

**Black Letter**, name applied in 17th cent. to Gothic type imitated from angular 15th cent. handwriting; used by Caxton.

**Blackley**, WILLIAM LEWERY (1830–1902), hon. canon of Winchester, wrote *Essays on Prevention of Pauperism by National Insurance*, containing the scheme afterwards taken up by Joseph Chamberlain.

**Black List**. Under Licensing Act (1902), a register ('Lloyd George's Black List') of habitual drunkards is kept; term also applied to such lists as 'Stubbs's,' giving names of bankrupts, etc.

**Blackmail**, legal term, meaning to extort money under threat of public exposure. The crime is punishable by a severe penalty, even though the statements alleged against a person be true. It was formerly the name given to money paid to Border raiders to purchase immunity from their raids and devastations.

**Blackmore**, RICHARD DODD-RIDGE (1825–1900), novelist, author of *Lorna Doone* (which made Exmoor as popular as Scott had made the Highlands) and other well-known romances, including *The Maid of Sker*, *Cripps the Carrier*, *Perlycross*, etc.

**Blackpool**, munic. and co. bor., par., and wat.-pl., Lancashire, England ( $53^{\circ} 49' \text{ N.}$ ,  $3^{\circ} 3' \text{ W.}$ ); its excellent sands and beautiful promenade have given it the

name of the 'Brighton of the North'; winter gardens, Eiffel Tower, etc. Pop. c. 70,000.

**Black Prince**, EDWARD, PRINCE OF WALES (1330–76), eldest son of Edward III.; distinguished himself in Fr. wars, especially at Crécy (1346); returned to England (1373), and became head of political faction opposed to his brother, John of Gaunt. The Black Prince's death left his son Richard, afterwards Richard II., heir to throne.

**Black Prince**, Brit. armoured cruiser (launched 1904), sunk in Jutland battle (May 31, 1916); ship name was introduced into Brit. navy about 1648.

**Black Rock**, urban dist., Dublin, Ireland ( $53^{\circ} 18' \text{ N.}$ ,  $6^{\circ} 12' \text{ W.}$ ); residential district. Pop. 9,000.

**Black Rod**, an officer (since 14th cent.) of the House of Lords and also of the Order of the Garter; appointed by the crown. The black rod from which he derives his title is a black staff surmounted with a golden lion, which he carries as a symbol of office. One of his principal duties is that of carrying communications between the Lords and Commons. Thus, when the king opens Parliament, Black Rod is sent to summon the Commons to attend at the bar of the House of Lords to hear the king's speech.

**Black Sea**, or EUXINE, inland sea, between Europe and Asia ( $41^{\circ}$ – $47^{\circ} 20' \text{ N.}$ ,  $27^{\circ}$ – $30^{\circ}$ – $41^{\circ}$ – $46' \text{ E.}$ ); area, 164,000 sq. m.; outlet to Mediterranean by Bosphorus, Sea of Marmora, and Dardanelles; shores low on N. and W.; good harbours except N.; numerous inflowing rivers; surface waters



fresher than ocean, bottom waters salt and lifeless; nearly always ice-free; one island, Adassi, at mouth of Danube.

It was named by the ancients *Pontus Euxinus*, being called *Euxeinus* (hospitable) by the Greeks; over it Jason sailed to find the Golden Fleece, and its shores are the scenes of numerous Gr. legends. Later, Gr. colonies were planted, and it was opened up to commerce by Rome and continued to offer free access to Western nations, until Constantinople fell into possession of the Turks (1453), when it was closed to all foreign traders. In 1774 Russia obtained right to trade here; shortly afterwards this right was extended to Austria, Britain, and France, and in 1856 (by Treaty of Paris) to all nations. The sea was declared neutral by the Treaty of Paris, but ceased to be so by decree of the Powers (1871); Turkey declared blockade (1877); Russian Black Sea fleet reorganized (1886); Black Sea territory declared Russian prov. (1896).

*Operations in the Black Sea.*—At the outbreak of the Great War the Ger. cruisers *Goeben* and *Breslau*, eluding the Allied fleets, entered the Dardanelles and were purchased by Turkey (Aug. 10, 1914). This addition to the Ottoman navy challenged Russian supremacy in the Black Sea. Turkey proceeded to commit various acts of aggression, culminating in a raid on Odessa (Oct. 29). After the formal declaration of war at the beginning of Nov., the Russian fleet succeeded in bringing the enemy to action (Nov. 18), and

in a running fight damaged several ships, including *Goeben*, which struck a mine in the Bosphorus and was *hors de combat* for several months. Russian ascendancy was established and increased by completion of the Dreadnought *Empress Maria*. During the Dardanelles operations (March 28, 1915) the Russian fleet co-operated by feint attacks on the Bosphorus, and Russian airmen bombed Constantinople. On April 3, Turkish cruiser *Medjidieh* struck a mine in Gulf of Odessa; was salvaged, and added to Russian navy with name of *Prut*. When Bulgaria entered the war in the autumn of 1915, Russian sea forces bombarded Varna. They also maintained a blockade of the Turk. coast to stop transport connection with the Caucasus, and materially aided in the capture of Trebizond (April 18, 1916). At times *Goeben* and *Breslau* attempted counter raids, bombarded undefended coast towns, and sank hospital ships. After the collapse of Rumania at the end of 1916 the Russian fleet gave assistance in the evacuation of Constanza. Admiral Kolchak, who had succeeded Eberhardt, kept intact the loyalty of the Black Sea units in the early days of the Russian revolution, but with the accession to power of the Bolsheviks their moral declined, and many of the ships were sunk or disabled. The Treaty of Peace with Turkey (May 1920) placed the Bosphorus and the Dardanelles under a Commission of the League of Nations.

**Blacksnake**, most common of larger colubrine snakes of N. America (*Zamenis constrictor*);

oviparous and non-poisonous; about 6 ft. in length.

**Blackstone**, SIR WILLIAM (1723-80), a distinguished writer on Eng. law, judge of the Common Pleas, principal of New Inn Hall, Oxford. His *Commentaries* have formed the basis of nearly all modern works of the kind.

**Blackthorn**, or SLOE (*Prunus spinosa*), belongs to plum family of Rosaceæ; flowers white; branches end in hard spine; fruit (dark purple) used for preserves and sloe gin.

**Blackwall**, dist., London, E., N. side of Thames, communication with S. side afforded by Blackwall Tunnel; E. India Docks and shipbuilding yards.

**Black Watch**. See ROYAL HIGHLANDERS.

**Blackwater**, name of some twenty rivers and eight villages in U.K.; frequent occurrence of name in Ireland due to dark-coloured bog water; most important of rivers rises on borders of Cork and Kerry and flows into Youghal harbour (51° 57' N., 7° 51' W.); length, 100 m.

**Blackwater Fever**, an acute febrile disease, causing blood destruction with appearance of blood pigment in urine; prevalent in tropical Africa; so frequently follows on malaria that it has been considered essentially the same disease; some hold that it follows upon an excessive use of quinine.

**Blackwood**, name applied to number of dark-coloured heavy woods used for furniture and other purposes—e.g., Australian blackwood, Indian blackwood (rosewood), etc.

**Blackwood**, FREDERICK. See DUFFERIN AND AVAL.

**Blackwood**, JOHN (1818-79), Scot. publisher, son of William Blackwood; edited *Blackwood's Magazine*; recognized the first Lord Lytton's genius, and discovered George Eliot, all of whose novels but one he published.

**Blackwood**, WILLIAM (1776-1834), Scot. publisher; founder of the firm of William Blackwood and Sons; moved to Glasgow and London, but eventually settled in Edinburgh as a bookseller, finally exchanging this trade for publishing; pub. first number of *Blackwood's Magazine* (1817). As editor had such distinguished contributors as Scott, Lockhart, Wilson, De Quincey, Hogg, etc.

**Bladder** (urinary), sac of muscular and membranous structure, serving as a receptacle for urine, which it receives from the kidneys by the ureters and expels from the body through the urethra. When empty it lies entirely within the human pelvis; when distended it rises up into the abdomen. The bladder is attached to the pelvis by ligaments at its neck, which is where the urethra commences, at the lowest part of the organ; otherwise it is freely movable, being supported by the neighbouring structures, and above, behind, and at the sides by the peritoneum. Its normal capacity is about one pint, but this is often enormously exceeded under abnormal conditions.

*Cystitis*, or inflammation of the bladder, is due to bacterial infection, usually by way of the urethra, and is manifested by painful and frequent micturition. It is treated by fomentations, urinary antiseptics,



and sedatives, and, if necessary, by irrigation of the bladder.

Under certain conditions *calculi*, or stones, are formed in the bladder, and these are removed by operation. The usual operation is that of *litholopaxy*, in which the stone is crushed by an instrument, passed by the urethra, and the fragments removed by a catheter. The old operation of *lithotomy*, or 'cutting for stone,' is not now generally advised, but is still necessary under certain extreme conditions. See also URINARY SYSTEM.

**Bladder Nut**, name given to *Staphyleaceæ*, related to holly family; deciduous shrubs and trees with spreading clusters of small white flowers; fruit a large, bladder-like capsule.

**Bladder Plum** (PLUM POCKET), a disease of plums due to fungus (*Exoascus pruni*). Pulp and stone are replaced by thin, soft, swollen flesh; disease is local, and affected branches must be cut away and burned.

**Bladder Seed**, genus of perennial herbs (*Umbelliferæ*), related to caraway and hemlock; fruit bladder-like; native of Europe and W. Asia; one species found in Devon and Cornwall.

**Bladder Senna**, genus of shrubs (*Leguminosæ*); native of S. Europe; leaves resemble senna; pods bladder-like, and burst with loud report when squeezed.

**Bladder-worms**. See under TAPE-WORMS.

**Bladderwort**, common name of the genus *Utricularia*; mostly aquatic; submerged leaves, hair-like, with bladders having trap-door entrance for capturing small animals for supply of nitrogenous

food material. See under INSECTIVOROUS PLANTS.

**Blades**, WILLIAM (1824-90), Eng. printer, a founder of the Library Association; pub. facsimile reproductions of the work of Caxton and others. His own works include *Enemies of Books*.

**Bladud**, legendary Brit. king, father of Shakespeare's King Lear, and founder of Bath, where his statue was erected in pump-room (1699).

**Blaeberry**. See BILBERRY.

**Blaenau Festiniog**, vil. and par., Merionethshire, Wales (53° N., 3° 56' W.); large slate quarries. Pop. 11,000.

**Blaenavon**, urban dist. and tn., Monmouthshire, England (51° 46' N., 3° 5' W.), 5 m. N.W. of Pontypool; iron and steel manufactures and coal mines. Pop. 12,000.

**Blaeu**, or BLAEUW, Dutch family, 17th cent., famous for map-making and for the production of geographical works.

**Blagden**, SIR CHARLES (1748-1820), physician. Among his important contributions to physical research was *The Cooling of Water below its Freezing-Point*.

**Blagodät**, MOUNT, peak in Ural Mts., Russia (58° 18' N., 59° 47' E.); magnetic iron ore.

**Blagoveshchensk**, tn., E. Siberia (50° 18' N., 127° 30' E.); ironworks, flour mills; shipbuilding, gold mining. Pop. 57,500.

**Blaikie**, WILLIAM GARDEN (1820-99), Scot. divine; moderator of Free Church Assembly (1892), prof. of pastoral theol., New Coll., Edinburgh (1868-97). He edited the *Sunday Magazine*, and his books include *Heroes of Israel*, *Thomas Chalmers*, etc.

**Blaina**, vil., and dist., Monmouthshire, England (51° 46' N., 3° 9' W.); coal mines and blast furnaces. Pop. 16,000.

**Blaine**, JAMES GILLESPIE (1830-93), Amer. leading politician, opposed President Johnson's reconstruction policy, the 'Greenback' movement, Bland Silver Bill, and Chinese immigration; his programme was 'national expansion' and 'participation in world-politics.'

**Blair**, ANDREW GEORGE (1844-1907), Canadian lawyer; minister of railways and canals (1896-1903); chief of Board of Railway Commissioners (1903).

**Blair**, HUGH (1718-1800), Scot. divine, prof. of rhetoric and belles-lettres in Edinburgh Univ.; much admired as an elegant preacher.

**Blair**, JAMES (1656-1743), a Scot.-Amer. ecclesiastic and educationist; bishop, president of council, and founder of Coll. of William and Mary, Virginia; pub. *The Present State of Virginia* (1727).

**Blair**, ROBERT (1699-1746), Scot. poet and divine; author of *The Grave*, illustrated in 1804-5 by William Blake.

**Blair**, SIR ROBERT (1859- ), education officer to London County Council since 1904; was previously chief inspector of technical education, Ireland; member of Mosely Education Commission to America (1903); knighted 1914; pub. *Some Features of American Education*, and *The Relation of Science to Industry and Commerce*.

**Blair Atholl**, or BLAIR ATHOLE, vil. and par., Perthshire, Scotland (53° 46' N., 3° 52' W.),

3 m. N. of Pass of Killiecrankie; Blair Castle, seat of Duke of Atholl. Pop. of par. 1,300.

**Blairgowrie**, tn., Perthshire, Scotland (56° 36' N., 3° 2' W.); linen, jute, fruit. Pop. 3,200.

**Blake**, EDWARD (1833-1912), Canadian-Irish politician; premier of Ontario (1871-2); Nationalist member for S. Longford, Ireland (1892-97).

**Blake**, FRANCIS (1850- ), Amer. inventor of telephone transmitter (1878) and other electrical devices.

**Blake**, ROBERT (1599-1657), Brit. admiral and naval hero; born Bridgewater, educated Oxford; sat in Long Parliament (1640), and fought on Parliamentary side in the Civil War; defended Bristol (1643), Lyme (1644), and Taunton (1644-5); appointed by Commonwealth 'general at sea' to track down Prince Rupert's ships, which he accomplished off Malaga (1650); commanded Brit. fleet against admirals van Tromp, de Witt, and de Ruyter, and severely defeated the Dutch off North Foreland (1653); destroyed Span. treasure fleet at Tenerife (1657), for which he received thanks of Parliament; died at sea within sight of Plymouth Sound; buried in Westminster Abbey. Renowned for skill, daring, and lofty character; was the founder of Britain's naval supremacy.

**Blake**, WILLIAM (1757-1827), Eng. poet, artist, and mystic; son of a London hosier, trained as an engraver, which profession was his chief means of livelihood; wrote at fourteen the lyric 'How sweet I roamed from field to field'; married Catherine

Boucher; exhibited at Royal Academy *The Death of Earl Godwin* (1780); pub. *Songs of Innocence* (1789) and *Songs of Experience* (1794), the text and decorative designs for both of the volumes being engraved by Blake himself, and afterwards hand-coloured; later, he pub. his mystical works—part prose, part verse—which include *The Gates of Paradise*, *The Marriage of Heaven and Hell*, etc. In art his inventive genius finds its culmination in the illustrated *Book of Job*, Dante's *Poems*, and Blair's *Grave*, and in the *One Hundred and Fourteen Designs for Gray's Poems*, discovered 1919. Blake's mysticism in art and literature, labelled madness by his age, is now better understood.

**Blakesley**, JOSEPH WILLIAMS (1808–85), dean of Lincoln, friend of Tennyson; one of the revisers of the N.T.; pub. *Four Months in Algeria* (1859).

**Blakiston**, THOMAS WRIGHT (1832–91), Eng. soldier, explorer, and ornithologist; during Chin. War (1859) explored and charted upper waters of Yang-tse-Kiang; studied ornithology of Japan; pub. *Five Months on the Yangtze* (1862).

**Blamire**, SUSANNA (1747–94), Eng. poetess, the 'Muse of Cumberland'; best songs, 'Ye shall walk in silk attire,' 'The Soldier's Return,' etc., in Scots dialect.

**Blanc**, MONT, highest peak (15,782 ft.) of Alps, and, outside of some Caucasus peaks, the loftiest summit in Europe; first ascended 1786; to s. of Chamonix.

**Blanc**, FRANÇOIS, Fr. financier; obtained fifty years' concession of Casino at Monte Carlo (1863). See MONTE CARLO.

**Blanc**, LOUIS (1811–82), Fr. publicist and historian; founder of *Revue du Progrès* (1839), in which appeared his chief Socialist work, *Organisation du Travail*; president of Government Labour Commission (1848), which established Ateliers Nationaux; member of National Assembly (1871); pub. *Histoire de la Révolution Française* (12 vols. 1847–62), also *Histoire de la Révolution de 1848*.

**Blanch** (or BLENCH) **Holding**, old Scot. tenure, ann. duty being only nominal (e.g., a penny Scots, a pound of wax, or a rose).

**Blanchard**, FRANÇOIS (1753–1809), Fr. balloonist; he and Dr. Jeffries made the first cross-Channel flight. His wife, Marie, shared his trips; was killed by a fall from her balloon in 1819.

**Blanchard**, SAMUEL LAMAN (1804–45), Eng. author; ed. *The True Sun* and *The Courier*; his essays were collected by Bulwer-Lytton (1846), under the title of *Sketches from Life*.

**Blanche**, AUGUST TEODOR (1811–68), Swed. dramatist; wrote play *Rika Merbsor*, and novels after the style of Eugène Sue.

**Blanche**, DENT. See DENT BLANCHE.

**Blanche**, JACQUES (1862– ), Fr. fashionable portrait painter, whose best-known portraits were exhibited at the Champ de Mars salon. He has written much on Brit. art and artists.

**Blanching** of VEGETABLES consists in excluding light, by 'earthing up' or otherwise, and so whitening the green leaves and stalks of celery, sea-kalé, lettuce, and rhubarb; treatment improves appearance and im-

parts crispness, finer flavour, and more digestible quality.

**Blanco.** (1) Cape, Sahara, W. Africa ( $20^{\circ} 48' \text{ N.}, 17^{\circ} 4' \text{ W.}$ ). (2) Cape, Morocco, Africa ( $33^{\circ} 7' \text{ N.}, 8^{\circ} 37' \text{ W.}$ ). (3) Cape, Spain ( $43^{\circ} 37' \text{ N.}, 6^{\circ} 49' \text{ W.}$ ). (4) Cape, Peru, S. America ( $4^{\circ} 15' \text{ S.}, 81^{\circ} 11' \text{ W.}$ ).

**Blanco, ANTONIO GUZMAN** (1830-99), Venezuelan statesman; president and virtual dictator for seventeen years; established good government and fostered general progress.

**Blanco y Arenas, RAMON, MARQUIS DE PENA PLATA** (1832-1906), Span. official; governor of Mindanao, Philippines, and succeeded Weyler as capt.-gen. of Cuba during Span.-Amer. War.

**Bland.** (1) **HUBERT** (1856-1914), Eng. Socialist and journalist; contributed dramatic and art criticism to *Daily Chronicle*, and weekly articles (by 'Hubert') to *Sunday Chronicle* from 1889 till 1914; pub. volumes of essays —e.g., *With the Eyes of a Man* (1905); was an original member of Fabian Society. (2) **Mrs. HUBERT BLAND** (Edith Nesbit) (1858- ), wife of above; poet and novelist; noted for capable novels with child characters.

**Blandford, mrkt. tn., Dorsetshire, England** ( $50^{\circ} 51' \text{ N.}, 2^{\circ} 9' \text{ W.}$ ); anc. earthworks and barrows in dist. Pop. 3,500.

**Bland Silver Bill.** See under **BIMETALLISM.**

**Blane, SIR GILBERT** (1749-1834), accompanied Admiral Rodney as medical attendant; discovered the efficacy of lime juice in combating scurvy, and advocated use of soap and better ventilation in ships.

**Blanford, WILLIAM THOMAS** (1832-1905), Eng. geologist; employed in geological survey in India; wrote *Manual of the Geology of India*, etc.

**Blankenberghe, wat.-pl., Flanders, Belgium** ( $51^{\circ} 18' \text{ N.}, 3^{\circ} 8' \text{ E.}$ ); golf links; occupied by Germans after fall of Antwerp. Pop. 5,000.

**Blankenburg.** (1) **Tn. and wat.-pl., Harz Mts., Germany** ( $51^{\circ} 47' \text{ N.}, 10^{\circ} 57' \text{ E.}$ ); market gardening. Pop. 11,500. (2) **Tn., Thuringia, Germany** ( $50^{\circ} 42' \text{ N.}, 11^{\circ} 16' \text{ E.}$ ); health resort. Froebel opened first kindergarten here in 1840. Pop. 3,500.

**Blanket,** a woollen covering for a bed (Fr. *blanc*, 'white,' as it was originally made entirely of white wool); manufacture similar to that of other woollen goods, but the soft fluffy matting is obtained by 'teaseling.'

**Blanketeers,** name given to a large body of Manchester operatives who met in St. Peter's Field (March 1817), provided with blankets for camping purposes, in order to march to London to lay their grievances before the Prince Regent. The project was abandoned, and the leaders were imprisoned.

**Blank Verse.** Unrhymed iambic pentameter verse is so called because of the absence of rhyme:

'So all day long the noise of battle  
    rolled  
Among the mountains by the winter  
    sea.'

'Blank verse' was employed as far back as the 10th cent., but in Eng. literature it was reserved for Marlowe, with his 'mighty line,' to show its mag-

nificent possibilities; in Shakespeare, his immediate follower, it was brought to a high state of perfection; Milton added resonance and variety, as a result of his study of the laws governing the harmonies of blank verse, and substituted the verse paragraph for the line as the unit of poetic expression; since when blank verse has been regarded as the most suitable medium for the noblest kinds of poetry.

**Blanqui, JÉRÔME ADOLPHE** (1798–1854), Fr. economist; travelled extensively in Europe and the East, and pub. numerous valuable works upon economic subjects; advocated Free Trade.

**Blanqui, LOUIS AUGUSTE** (1805–81), Fr. author; founded Société Républicaine Centrale; uncompromising advocate of Communism; pub. several works on economic and social questions.

**Blantyre.** (1) Tn., Lanarkshire, Scotland (55° 47' N., 4° 7' W.); coal; birthplace of Livingstone. Pop. 16,800. (2) Mission station, Nyasaland, Africa (16° S., 36° E.); named after Livingstone's birthplace; founded 1876; commercial centre.

**Blaps.** See HETEROMERA.

**Blarney, tn., Cork, Ireland** (51° 56' N., 8° 35' W.); in outer wall of Blarney Castle is the famous 'Blarney stone.'

**Blasco Ibáñez, VICENTE** (1866–), Span. novelist; attacks established systems. Works include *Flor de Mayo* (1895), *La Barraca* (1898), *La Catedral* (1903), *El Intruso* (1904), *La Maja Desnuda* (1906), *Sangre y Arena* (Eng. trans. *The Matador*).

**Blaserna, PIETRO** (1836–), Ital. scientist and statesman;

vice-president of senate (1902); author of several scientific works.

**Blasius, St.,** bishop and martyr, beheaded under Dioclesian in 316, and traditionally said to have been tortured with wool-combing instruments; regarded as patron saint of wool-combers.

**Blasphemy,** a crime by the laws of most Christian countries; usually restricted to offensive attacks on beliefs held sacred by the majority of the people. In earlier times it included any questioning of Christian truths.

**Blass, FRIEDRICH** (1843–1907), Ger. classical scholar; greatest work, *Die Attische Beredsamkeit* (1868–80); numerous critical editions of Gr. authors.

**Blasting,** the shattering of large masses of solid matter in engineering, mining, and quarrying by means of explosive charges in bore-holes in the material; the position and number of bore-holes vary with the nature of the effect desired. Formerly made by hand, drills are now largely worked by machinery—e.g., Ingersoll Rock Drill, Optimus Compound Drill, Adelaide Rock Drill, and Brandt's Drill. The last type, driven by compressed air (obtained by water power), was used in making the Mont Cenis, St. Gothard, and Simplon tunnels. Gunpowder was, and still is, largely used; more powerful high explosives have too rapid action and only local effect. But nitroglycerine, gun-cotton compounds, and those of the Sprengel type are largely used, and ammonium nitrate mixtures have become important. The bore-hole is charged for a considerable distance and made secure,

and is ignited by means of a fuse (Eickford's safety), but preferably by electricity. With many explosives, detonators are used.

C. Le Neve Foster, *Textbook of Ore and Stone Mining*; H. W. Hughes, *Textbook of Coal Mining*; *Instructions in Military Engineering*, Part 4, 'Mining and Demolitions.'

**Blasting Gelatine**, a powerful explosive consisting of a solution of nitrocellulose in nitroglycerine, 93 to 95 per cent. of the latter; a gelatinous, honey-coloured solid; kept in perforated boxes in water tanks; made up in cartridges and exploded by means of a powerful detonator.

**Blastoderm**, the primitive layer of cells formed by subdivision of the fertilized germ cell. See EMBRYOLOGY.

**Blatchford**, ROBERT (1851–), Eng. Socialist and journalist (pseudonym 'Nunquam'), founded the *Clarion*; author of *Merrie England, Britain for the British, God and my Neighbour*.

**Blavatsky**, HELENA PETROVNA (1831–91), Russian theosophist; claimed to have been initiated into esoteric Buddhism, and to have the power of communicating with the unseen world. With Colonel Olcott and other converts she founded, in America, the Theosophic Society (1875). Exposed for her trickery by the Society for Psychical Research (1884). Author of *Isis Unveiled* (1877), and the *Key to Theosophy* (1889).

**Blazon**, the heraldic description of a coat of arms in the proper terms of armoury.

**Bleaching** is the decolorizing of materials by chemical treat-

ment. The materials may be cotton, linen, wool, silk, straw, etc., and the bleaching may be by oxidation or reduction.

*Oxidizing* bleaching agents are: bleaching powder (calcium chlorohypochlorite  $\text{Ca} \cdot \text{Cl} \cdot \text{OCl}$ , prepared by saturating slaked lime with chlorine gas); *eau de Javelle* (potassium hypochlorite,  $\text{K} \cdot \text{OCl}$ ); sodium hypochlorite,  $\text{NaOCl}$  (obtained by passing chlorine into sodium hydroxide solution:  $2\text{NaOH} + \text{Cl}_2 = \text{NaCl} + \text{NaOCl} + \text{H}_2\text{O}$ , or by electrolysis of sodium chloride solution:  $2\text{NaCl} = 2\text{Na} + \text{Cl}_2$ ,  $2\text{Na} + 2\text{H}_2\text{O} = 2\text{NaOH} + \text{H}_2$ ,  $2\text{NaOH} + \text{Cl}_2 = \text{NaCl} + \text{NaOCl} + \text{H}_2\text{O}$ ); air and ozone; sodium peroxide,  $\text{Na}_2\text{O}_2$ ; hydrogen peroxide,  $\text{H}_2\text{O}_2$ ; potassium permanganate,  $\text{KMnO}_4$ , and dichromate,  $\text{K}_2\text{Cr}_2\text{O}_7$ . The most important of these agents is bleaching powder, from which chlorine is liberated by dilute acid, thus:  $\text{CaOCl}_2 + 2\text{HCl} = \text{CaCl}_2 + \text{H}_2\text{O} + \text{Cl}_2$ . Dry chlorine will not bleach, and the action of moist chlorine is attributed to the liberation of nascent oxygen from water, thus:  $\text{Cl}_2 + \text{H}_2\text{O} = 2\text{HCl} + \text{O}$ . So bleaching is due to oxidation.

*Reducing* bleaching agents are: sulphur dioxide,  $\text{SO}_2$ ; sulphurous acid,  $\text{H}_2\text{SO}_3$ ; and sulphites, e.g., sodium 'metabisulphite,'  $\text{Na}_2\text{S}_2\text{O}_5$ ; hydrosulphites (or true hyposulphites), e.g., sodium hydrosulphite,  $\text{Na}_2\text{S}_2\text{O}_4 + 2\text{H}_2\text{O}$ . Bleaching by reduction is probably due to the addition of hydrogen to the colouring matter, thus:  $\text{SO}_2 + 2\text{H}_2\text{O} = \text{H}_2\text{SO}_4 + 2\text{H}$ , and is not so permanent as bleaching by oxidation, because reoxidation by the air gradually takes place.

Vegetable fibres—e.g., cotton and linen—are scoured before they are bleached with bleaching powder by being boiled with caustic lye ( $\text{NaOH}$ ) or soda ash ( $\text{Na}_2\text{CO}_3$ ), or sometimes milk of lime, in a *kier*. This process saponifies the fats present in the fabric or yarn, which are then removed by washing with water or dilute mineral acid.

The material is next *chemicked* with bleaching powder solution, and then *soured* in a bath of dilute mineral acid. This liberates chlorine from the bleaching powder, and completes the bleaching. Finally, the material is thoroughly washed with water. Woollen goods are washed with soap solution, since caustic lye would damage the fibres, and bleached with sulphurous acid, or, better, hydrogen peroxide. Bleaching powder turns wool yellow. Silk is washed with soap solution to remove the 'silk-glue,' and bleached with sulphur dioxide, hydrogen peroxide, or permanganate and sulphurous acid. Straw is bleached by reduction with sulphur dioxide; hence it turns yellow again by atmospheric oxidation. Hair, furs, feathers, and sponges are also bleached by hydrogen peroxide.

**Bleaching Powder**, 'chloride of lime,' or, more correctly, 'chlorinated lime'; prepared by exposure of slaked lime to action of chlorine gas until absorption ceases; white powder with strong odour like chlorine; used in powder or solution as bleach and also as a disinfectant.

**Blcak** (*Alburnus lucidus*), a Cyprinid fish allied to the bream;

small, silvery; 5 to 6 in. long; common in fresh water of N. Europe, but absent from Scotland and Ireland. See CARPS.

**Bleeding**, or BLOOD-LETTING, the removal of blood from the body as a therapeutic measure; formerly carried out by means of leeches, now done by 'cupping,' the cupping glass or thick tumbler being heated to expel the air and then smartly applied to skin, which rises up into the cup. Another method is by cutting a vein; sometimes used in cases of cerebral hæmorrhage. See HÆMORRHAGE.

**Bleek**, FRIEDRICH (1793–1859), Ger. Biblical scholar; prof. of theol. at Bonn from 1829; several posthumously pub. works. WILHELM HEINRICH IMMANUEL BLEEK (1827–75), Ger. philologist, son of above; spent much time in S. Africa and pub. *Vocabulary of the Mozambique Language, Comparative Grammar of the S. African Languages*, and other philological works.

**Bleibtreu**, GEORG (1828–92), Ger. painter of battle scenes; painting is vigorous and powerful, and colouring brilliant; painted among others *Battle of Waterloo, Capitulation of Sedan*.

**Bleibtreu**, KARL (1859– ), Ger. man of letters; has written descriptions of battles of Marston Moor, Waterloo, Sedan, etc.

**Blekinge**, co., Sweden (c. 56° 18' N., 15° 18' E.); was Dan. terr. till 1658; salmon fisheries (Morrum R.). Pop. 149,400.

**Blende**, or SPHALERITE, zinc sulphide ( $\text{ZnS}$ ); found in cubic and tetrahedral commonly twin crystals, very brittle, semi-transparent to opaque. Brown, black,

red, yellow, or green, it usually contains admixtures of iron, sometimes cadmium sulphides soluble in strong nitric acid, leaving sulphur; is found in Australia, U.S., and England; used for preparation of zinc, zinc sulphate, and sulphuric acid.

**Blenheim.** (1) Vil., Bavaria, near Danube ( $48^{\circ} 38' \text{ N.}, 10^{\circ} 37' \text{ E.}$ ); English and Austrians under Marlborough and Prince Eugène defeated French and Bavarians under Tallard and Elector of Bavaria (Aug. 13, 1704); allies' casualties amounted to 13,000; French and Bavarians, 30,000. (2) Chief town of Marlborough, provincial dist., New Zealand ( $41^{\circ} 28' \text{ S.}, 174^{\circ} \text{ E.}$ ); rich agricultural and fruit district. Pop. 3,800.

**Blenheim Park,** Woodstock, England; granted by Queen Anne to Marlborough (1704); fine house designed by Vanbrugh.

**Blenkinsop,** JOHN (1783–1831), inventor of first locomotive to achieve any commercial success; still model of engines used on certain mountain railways.

**Blennerhasset,** LADY CHARLOTTE (1843–1917), Ger. essayist and biographer; wrote lives of Madame de Staël, Talleyrand, Queen Victoria, etc.

**Blennerhassett,** HARMAN (1765–1831), Amer. lawyer, of Irish birth and education; settled in America, and became intimate with Aaron Burr, in whose conspiracy to invade Mexico he became implicated, and along with whom he was indicted for treason, but released. His wife achieved popularity as a poetess.

**Blennies** (Blenniidae) include about 350 species of long-bodied fishes, with long dorsal and anal

fins; mostly small, active fishes common about shore rocks in all regions, although a few occur in fresh waters. Several species—the shanny, the gunnel or butterfish, and the wolf-fish or catfish—inhabit Brit. seas; but only the last, which may be 5 or 6 ft. long, is of value as food.

**Blériot,** LOUIS (1872– ), Fr. aviator and inventor; was the first (1909) to fly the Eng. Channel on a monoplane (38 min.).

**Blessington,** MARGUERITE, COUNTESS OF (1789–1849), Irish writer and woman of fashion; was twice married—on second occasion to Earl of Blessington, after whose death she lived under the protection of Count d'Orsay, who had previously married her stepdaughter. She travelled much on the Continent, made the acquaintance of Lord Byron, and her London house attracted most of the notabilities of the period. She edited *The Book of Beauty* and *The Keepsake*, pub. a few novels and other books, including her *Conversations with Lord Byron* (1834).

Chorley, *Life and Autobiography* (1874).

**Bletchingley,** par. and vil., Surrey, England ( $51^{\circ} 14' \text{ N.}, 0^{\circ} 6' \text{ W.}$ ); its High Street is part of the Pilgrims' Way to Canterbury. Pop. 2,300.

**Bletchley,** vil., Bucks, England ( $51^{\circ} 59' \text{ N.}, 0^{\circ} 46' \text{ W.}$ ); ry. in. For postal and urban dist. council purposes it includes Fenny Stratford. Pop. of urban dist. 5,200.

**Blewfields.** See BLUEFIELDS.

**Blicher,** STEEN STEENSEN (1782–1848), Dan. poet and favourite novelist; skilfully describes rural types of Jutland.



**Blickling Homilies**, nineteen sermons, dating probably from third quarter of 10th cent., preserved in a unique MS. at Blickling Hall, Aylsham, Norfolk.

**Blida**, fort. tn., Algeria (36° 27' N., 2° 50' E.); orange and flour trade; rebuilt after earthquake (1825). Pop. 35,400.

**Bligh**, WILLIAM (1754-1817), Eng. admiral; commanded the *Bounty*, in 1787, at Tahiti, when his crew mutinied and cast him adrift in an open boat. He was afterwards governor of New South Wales, but was deposed for tyrannous conduct and sent back to England. See BOUNTY, MUTINY OF THE.

**Blight**, term loosely applied to weakness or disease in plants; particularly applied to white substance in which are concealed the aphides so destructive to rose, apple, and other trees. Ward, *Diseases in Plants* (1901).

**Blighty**, soldiers' term used in Great War as synonym for home. A 'blighty' is a wound serious enough to necessitate a man being sent home. Derived probably from Hindu word for Britain, though some attribute it to Arabic *belad-i*, 'my country.'

**Blind and Blindness.** In medical terminology the expression blindness means absolute sightlessness; partial blindness being known medically as amaurosis or AMBLYOPIA. Blindness cannot always be accounted for, but in general it may be said to arise from inflammatory or degenerative changes in some part of the path between the cornea without and the visual centre (or that part of grey matter especially concerned with sight)

within. Through better comprehension of the causes, and through modern development of hygienic ideas and of medical science, blindness is now on the decrease. The most important cause is purulent inflammation of the eyes of newly born infants, which can in nearly every case be very simply prevented, and, in its early stages, always cured. Moreover, it has been calculated that half the blindness existing is preventable in one way or another. See under EYE.

The first record of an institution for the blind being established is the foundation of a hospital by St. Louis in Paris in A.D. 1260, for the accommodation of 300 blind persons. The education of the blind, however, was first commenced by Valentin Haüy, who founded the National Institution for Teaching the Blind in Paris in 1785. Since that time schools and institutions have been established in all civilized countries, the first in Britain being the School for the Indigent Blind in Liverpool (1791), closely followed by the Royal Blind Asylum in Edinburgh (1793).

Following the first, which Haüy invented, numerous systems of raised characters to enable the blind to read had been promulgated, and the Bible and other books had been printed, when the Brit. and Foreign Blind Association, founded by Dr. Armitage in 1868, made an exhaustive inquiry into the different systems, and adopted the Braille type, used both for words and for music, invented by Louis Braille, a Fr. teacher of the blind; this

has since remained the standard system. It consists of variations on six dots in an oblong : : , 63 different combinations being possible. The National Lending Library has over 40,000 works, in Braille and other type, which are distributed throughout the country, while numerous periodicals are published in raised characters. There is also an excellent system, invented by the Rev. W. Taylor, for working arithmetical or algebraical problems, in variations in the positions of embossed pins in a board; while raised geometrical figures, maps in relief, and numerous other similar appliances are to-day employed in educating the blind. In 1893 an Act of Parliament was passed in England (1890 in Scotland) making the elementary education of blind children compulsory. As the result of the recommendations of a committee which sat from 1914 till 1917, the welfare of the adult blind is now part of the work of the Ministry of Health, guided by three committees for England, Scotland, and Ireland respectively. Blindness is defined by the Ministry of Health as 'too blind to perform work for which eyesight is essential.'

Music is the profession which is the most suitable for, and where possible the most often followed by, the blind, either playing or teaching music or pianoforte tuning. School teaching also provides occupation for a certain number, and, for such as are unable to prepare themselves for the above, various handicrafts—*e.g.*, basket making, chair caning, mat making, and

bedding manufacture—provide a means of livelihood. Of recent years massage has been largely taught, and is proving a remunerative and satisfactory career for blind men and women. The Royal Normal Coll. for the Blind, founded in 1872, gives both a general and a musical education to young blind persons in order to qualify them for various posts, especially as piano tuners, organists, school teachers and music teachers, and it is now recognized by the Education Department as a training college for blind teachers. In America the education of the blind is in an even more advanced condition than in Britain. The education of the blind-deaf has attracted much attention of recent years, owing to the remarkable achievements of Miss Helen Keller, who, though blind and deaf, became a distinguished scholar and writer. History is by no means wanting in examples of famous and distinguished blind persons, including Homer, John Milton, W. H. Prescott, Henry Fawcett, etc.

Shortly after the outbreak of the Great War a committee was formed, with Sir Arthur Pearson as chairman, to ensure the training of blinded soldiers and sailors. Homes were established at Torquay, Brighton, Edinburgh, etc., and most of the men displayed not only remarkable cheerfulness and courage in adapting themselves to their new conditions of life, but made astonishingly good progress in finger reading and in learning new occupations, such as type-writing and shorthand, massage, poultry farming, basket and mat

making, carpentry, and boot and shoe mending. A large sum of money has been raised to provide not only for the training of the men, but for their after-care, and for the maintenance of those so incapacitated as to be unable to do anything effective for their own support.

**Armitage**, *Education and Employment of the Blind* (1871); *Report of the Royal Commission on the Blind, Deaf, and Mutes* (1889); Mell, *Encyklopädisches Handbuch des Blindenwesens* (1900); Helen Keller, *The Story of My Life* (1903); and the annual reports of the various institutions for the blind.

**Blind**, KARL (1826–1907), Ger. author and revolutionist, friend of Mazzini, Garibaldi, and Louis Blanc; he furthered Schleswig-Holstein movement, and wrote many articles on literature as well as on politics.

**Blind**, MATHILDE (1841–96), poetess; author of *Prophecy of St. Oran*, *The Heather on Fire*, *The Ascent of Man*, *Tarantella* (a prose romance), etc.

**Blind-alley Occupations**, name applied to occupations which offer to boys and girls little hope of advancement, and train them for no future industry—e.g., errand and news boys, street vendors, etc.

**Blind-fish**, found in Kentucky caves (*Amblyopsis*); has degenerate hidden remnants of eyes; another type (*Lucifuga dentata*), in caves of Cuba, is also blind; blindness considered due to degeneration through absence of normal stimulus.

**Blind Spot in eye**, that part of the retina which is pierced by

the optic nerve, and which is insensible to light. See **VISION**.

**Blindstory**, architectural term sometimes applied to triforium of a Gothic church; is distinguished from clerestory, which is part of cathedral wall with windows.

**Blind Worm**. See under **LIZARDS**.

**Bliss**, FREDERICK JONES (1859–), Amer. archæologist; explorer to Palestine Exploration Fund (1890–1900); author of *Excavations in Palestine*, etc.

**Bliss**, PHILIP PAUL (1838–76), Amer. singing evangelist; many of his hymns became exceedingly popular when utilized by Moody and Sankey, e.g., ‘Hold the Fort.’

**Blister**, collection of serous fluid beneath superficial layers of skin, usually caused by a burn or as result of disease; blistering employed in med. as counter-irritant.

**Blister Beetle**, popular name for a number of beetles of two distinct families, Meloidæ and Cantharidæ; refers to vesicating or blister-raising properties of their body-juice.

**Blizzard**, name given to bitter, snow-laden gale; most common in polar regions, western U.S., etc., but occurs also in Brit. Isles.

**B.L.L.**, Bachelor of Laws (also LL.B.).

**Bloch**, CARL HENRIK (1834–90), Dan. painter and etcher; portrayed Zealand and Jutland peasant life; his *Christian II.* and *Samson and the Philistines* are in the Royal Gallery, Copenhagen; one fine piece at Athens.

**Bloch**, JEAN DE (1836–1902), Polish banker and railway constructor; his best-known book is *The War of the Future*, in which he predicts that modern wars

must result in economic exhaustion, and 'a kind of stalemate,' with no decisive issue.

**Block,** part of apparatus for raising sails and yards, tightening ropes, etc.; consists of frame or shell containing pulley or pulleys, usually termed sheaves. The coefficient block of a vessel is the ratio of volume of displacement to circumscribing parallel-pipedon, which is found by dividing displacement volume by total figures of length, breadth, and mean draught.

**Blockade.** Before the Great War, blockade meant the cutting off from all commercial intercourse by sea of one or more of an enemy's ports. Since this involved interference with the right of neutrals to trade with either belligerent, blockade had to be enforced by certain rules and regulations. During the Great War, when Britain applied commercial and economic pressure to the Central Powers, a complete revolution was wrought in our ideas of blockade, and the old rules and regulations need not, therefore, be detailed. The mere isolation of the Ger. North Sea ports—blockade of the Baltic ports was always impossible—would have effected nothing, for the enemy could have supplied himself through Holland and the Scandinavian countries. A similar difficulty arose during the American Civil War. After the Federal fleet had blockaded the southern ports, the Confederates arranged to get supplies through Mexico. To this the Federalists replied by asserting the doctrine of 'continuous voyage or ultimate destination,' and stopping goods

consigned to Mexico but really intended for the Confederates. On this principle the Allies stopped all vessels going to or coming from Scandinavia and Holland, and seized so much of their cargoes as was shown to be of enemy origin or destination. All shippers in northern neutral ports were required to obtain from the Brit. consul certificates of origin, and these were only issued after proof that the goods were in substance neutral. All other goods from these ports were liable to seizure. Though this action was said to violate the DECLARATION OF LONDON, we proceeded on the Orders in Council of May 1915, which declared that enemy goods in neutral ships would be seized in retaliation for the German submarine campaign. The measures indicated above practically brought the enemy's outward trade to an end by the close of 1915. The stoppage of enemy imports was, however, a much more difficult matter; neutral nations had to be treated with consideration, and Amer. public opinion had especially to be conciliated. The consequence was that a completely effective stoppage of imports was always hampered. Nevertheless, by the middle of 1916 the blockade of the Central Empires was far more complete than any blockade of history. The problems involved were very complicated, and involved not only the searching of neutral ships but the determination of what goods were genuinely intended for neutral consumption. Ultimately neutrals were induced to accept a system of

rationing based on pre-war supplies. Their acceptance of this measure obviated the doubtful validity of the procedure.

Interception of the overseas trade of our enemies was only a portion of the blockade. Similar steps were taken to prevent goods passing through Switzerland; this was largely managed by the French and Italians, through whose country the goods had to pass before reaching the Central Powers. It is certain, however, that this part of the blockade was never so complete as it might have been. Efforts were also made to limit the exports to the Central Powers of produce and manufactures from the northern neutrals and Switzerland, but after elaborate negotiations the result was only partially satisfactory. After the entry of America into the war, the Allies had control of all important sources of overseas supply; nevertheless it is doubtful if more was achieved than under earlier conditions. The truth is that up to the end of the war all the border neutrals, except Norway, and perhaps Sweden, were more afraid of Germany than of the Entente. It is worthy of notice that Denmark, though she ran graver risks than the others, maintained a commercially favourable attitude to the Entente throughout the war.

The cumulative effect of the blockade was undoubtedly to inflict a large amount of hardship and suffering on enemy populations, but the blockade was no worse in its effect than the novel and murderous methods of warfare introduced by the Germans.

It was largely the blockade that broke down the Ger. *moral*, though it would be too much to say that the war could have been won by blockade alone.

**Block-books**, books printed from engraved wooden blocks, preceded during 15th and 16th centuries printing from movable types; probably method was derived from China.

**Blockhouse**, name, which dates back to the 16th cent., for a small temporary fort composed of logs, corrugated iron, or other material, roofed in, and loopholed for rifle fire; during Great War most of defences were underground, but 'pill-boxes' of concrete were used. No blockhouse, however constructed, can withstand modern artillery fire.

**Blocking Course**, in masonry, a course of stones laid above a projecting cornice, that its weight may prevent the latter from falling, where the centre of gravity of cornice is rather far forward.

**Bloemfontein**, cap., Orange Free State prov., S. Africa (29° 7' s., 26° 13' E.); situated on a plain; elevation, 4,518 ft.; well built; large gardens; healthy climate; Grey Univ. Coll.; seat of supreme court of S. Africa; military coll.; occupied by Lord Roberts, March 1900. Pop. 30,800 (whites 14,700).

**Bloemhof**, tn., Transvaal, S. Africa (27° 41' N., 25° 35' E.); Beyers defeated here during rebellion (Nov.-Dec. 1914).

**Bloet**, ROBERT (d. 1123), Bishop of Lincoln, chancellor to William I. and Rufus, justiciar under Henry I.; his household was a training school for young nobles.

**Blois**, anc. city, Loir-et-Cher, France, on Loire (47° 35' N.,

1° 20' E.); castle of great historical interest (13th to 16th cent.); favourite residence of Fr. kings; Gothic cathedral; wine, timber; gloves. Pop. 24,000.

**Blok, PETRUS JOHANNES** (1855— ), Dutch historian, prof. at Leyden; his works include *Geschiedenis van Nederlandsche Volk* (8 vols. Eng. trans.).

**Blomefield, FRANCIS** (1705–52), topographer, rector of Fersfield; wrote *History of Norfolk*. He was the discoverer of the famous *Paston Letters*.

**Blomfield, SIR ARTHUR WILLIAM** (1829–99), Eng. architect; works include St. Mary's, Portsea; Sion Coll. and Library, Victoria Embankment; and Church House, Westminster

**Blomfield, CHARLES JAMES** (1786–1857), Bishop of London; originator of diocesan reforms; ed. several plays of Æschylus, etc.

**Blommaert, PHILIP** (1809–71), Flem. author, who devoted himself to revival of national language and spirit; author of *History of the Belgians*, etc.

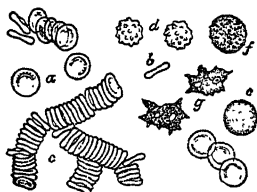
**Blommers, BERNARDUS JOHANNES** (1854— ), Dutch artist; his works include landscapes, interiors, and scenes of peasant and fisher life; painted *Girl Knitting*, *Mother's Joy*, etc.

**Blondel** (fl. 12th cent.), Fr. *trouvère*; according to legend, discovered Richard Cœur de Lion, imprisoned at Dürrenstein, by singing one of Richard's songs outside the castle.

**Blondin, CHARLES** (1824–97), stage-name of JEAN FRANÇOIS GRAVELET, Fr. acrobat and tight-rope walker; crossed Niagara Falls (1859) on a tight rope in five minutes. He afterwards

performed the feat blindfold in a sack, trundling a wheelbarrow; again on stilts; and yet again with a man on his back, sitting down in middle to eat his lunch. He appeared at the Crystal Palace, London (1861–2); most difficult feat was walking from mainmast to mizzenmast on P. and O. steamer *Poona* while on voyage to Australia.

**Blood**, red fluid which circulates in the arteries and veins of animals, in order to nourish the body, to carry away waste products to the excretory organs, and to protect the body against invading organisms. The blood



*Blood Corpuscles.*

a, Red corpuscle; b, the same in profile; c, red corpuscles in rouleaux; d, crenate red corpuscles; e, finely granular colourless corpuscle; f, coarsely granular, g, amoeboid forms

of human beings has sp. gr. 1·055, a salt taste, and an alkaline reaction. It is composed of the fluid element, or *blood plasma*, which carries food substances and waste products in solution, and the cellular elements, or *red and white corpuscles* and *blood platelets*. In a cubic millimetre of human blood there are about 5,000,000 red corpuscles, 8,000 white corpuscles, and 500,000 blood platelets. In shape a red corpuscle is a disk, concave on each side, and slightly thicker at the edge. It is composed

chiefly of nitrogenous material with which is in loose chemical combination an important protein named *hæmoglobin*, which combines with oxygen and yields it up on its concentration decreasing. This power of oxygen-carrying, which the red corpuscles have in the *hæmoglobin*, is their most important quality. White corpuscles, or *leucocytes*, are derived from lymph glands and the spleen, and are of various kinds and shapes, being classified mainly according to the staining qualities they exhibit under the microscope. The great value of the white corpuscles is in the power they have of destroying inflammation products, bacteria, etc., and thus protecting the body. Blood platelets are small circular bodies, about half the size of red corpuscles, and are believed to have an important function in the clotting of blood. In the process of clotting *fibrin* is precipitated from the plasma in the form of fine threads, which interlace in every direction, and entangle the corpuscles in their meshes; during the process *fibrin* is also believed to be derived from the clumps which form blood platelets. Resistance to disease caused by bacteria is due to the white corpuscles and the formation of certain anti-bodies in the blood, which either destroy the bacteria or assist the white corpuscles to do so. This resistance can be produced or stimulated artificially by the injection of the products of bacteria or their toxins in regulated non-lethal doses.

In ANÆMIA, either primary or secondary, the amount of hæmo-

globin in the blood is lessened, either in the individual red corpuscles, or through diminution in their number.

In leucocythæmia, or leukæmia, the white corpuscles are enormously increased, being deposited in the liver, kidneys, and other organs.

Wooldridge, *Chemistry of the Blood*; Howell, *Textbook of Physiology*; Halliburton, *Textbook of Physiology*; Gulland and Goodall, *The Blood* (2nd ed. 1914).

**Blood**, AVENGER OF (Heb. *goël haddam*), one who pursued a manslayer to avenge the death of his kinsman. By Heb. law the slayer could flee to the altar or to the cities of refuge and there lay his case before the elders (Josh. 20: 4f.). In this way a certain check was given to the blood feud.

**Blood Flower**, common name for genus *Hæmanthus*, of family Amaryllidaceæ, nearly related to snowdrop; natives mostly of S. Africa; the juice obtained from one species is used by Hottentots to poison their arrows.

**Bloodhound**. See DOG FAMILY.

**Blood-letting**. See BLEEDING.

**Blood-poisoning**. See SEPSIS.

**Blood-rain**, a rain of deep red colour, of frequent occurrence in Italy and S. Europe; colour due to microscopic dust of Sahara; occasions superstitious fear.

**Blood-root**, name used to denote more plants than one, chiefly *Sanguinaria canadensis*, whose juice was used by Red Indians for staining; also applied to *Hæmodoraceæ*.

**Blood-stains**, marks caused by effused blood, are important in connection with medico-legal investigations; by means of chem-

ical and biological tests, it has been found possible to distinguish between the blood of different animal species—a discovery of great importance in criminology.

**Bloodstone**, or **HELIOTROPE**, a dark-green variety of chalcedony, splashed and blotched with spots of bright red; found in Iceland, isl. of Rum (Scotland), and in India.

**Bloody Assizes**. See under **JEFFREYS, GEORGE**.

**Bloomer**, **AMELIA JENKS** (1818–94), Amer. dress reformer, after whom ‘bloomers’ are named; was a pioneer of the women’s dress-reform movement (short skirt and loose trousers); was also advocate of temperance and woman’s suffrage.

**Bloomfield**, **tn.**, New Jersey, U.S. (40° 48′ N., 74° 12′ W.); manufactures woollens, rubber goods, silks, paper. Pop. 15,100.

**Bloomfield**, **MATRICE** (1855–), Amer. philologist; prof. of Sanskrit at Johns Hopkins Univ.; specialized on Vedic literature; trans. Max Müller’s *Sacred Books of the East* and Sanskrit texts.

**Bloomfield**, **ROBERT** (1766–1823), Eng. poet; pub. several volumes of verse dealing with rural life; his best-known poem, *The Farmer’s Boy*, had a large sale, and was illustrated by Bewick; *Remains* pub. 1824.

**Bloomington**. (1) City, Illinois, U.S. (40° 32′ N., 89° 2′ W.); coal mines; pork-packing and fruit-canning industries; educational centre. Pop. 25,800. (2) City, Indiana, U.S. (39° 12′ N., 86° 31′ W.); large limestone quarries; state univ.; woollens, tanneries. Pop. 8,800.

**Bloomsbury**, part of eccles.

par. of St. Giles-in-the-Fields and St. George, London.

**Blore**, **EDWARD** (1787–1879), architect and artist, was a pioneer of taste for Gothic arch. in England; restored Glasgow Cathedral, and designed Abbotsford.

**Blouet**, **PAUL**. See **MAX O’RELL**.

**Blount**, **CHARLES**, **EARL OF DEVONSHIRE AND BARON MOUNTJOY** (1563–1606); fought against Spaniards in Netherlands, and was afterwards implicated in conspiracy of Essex; frustrated attempt of Spaniards at rebellion in Ireland (1601); was cl. lord-lieutenant of Ireland by James I.; raised to peerage (1603).

**Blount**, **CHARLES** (1654–93), Eng. deist; author of *Anima Mundi* (1679), in which he expresses his views on immortality; *Great is Diana of the Ephesians* (1680), an attack upon priestcraft; and a trans. of the first two books of *Apollonius Tyaneus*.

**Blount**, **EDWARD** (fl. 1588–1632), Eng. printer; was the joint-printer with Jaggard of the ‘first folio’ of Shakespeare’s plays (1623), which he is supposed to have helped Heminge and Condell to edit. He also pub. some works of Marlowe and Lyly, and himself trans. books from the Spanish and Italian.

**Blount**, **THOMAS** (1618–79), Eng. antiquary; author of *Nomolexicon* (1670), a legal dictionary, and antiquarian works; but chiefly remembered as the author of the *Boscobel* tract (1651) describing the adventures of Charles II. after Worcester.

**Blount**, **SIR THOMAS POPE** (1649–97), Eng. writer; brother of Charles Blount; was author



of *Essays on Several Occasions* (1692), in which he deals with educational and other topics.

**Blow**, JOHN (1648-1708), Eng. composer and organist; born N. Collingham (Notts); became a chorister of the Chapel Royal; organist of Westminster Abbey (1669-80); composer to the Chapel Royal (1699). He wrote an immense number of anthems and services, besides choral odes and other forms of music.

**Blowing Machines**, contrivances for producing currents of air, are used chiefly for supplying blast for furnaces and for ventilation. They have developed from simple bellows with intermittent puffs, the latter disadvantage being obviated by the double bellows providing a continuous blast used by smiths. For furnaces and the Bessemer steel manufacturing process blowing engines of various types have been constructed, the simplest consisting of a cylinder with reciprocating piston moved by steam or gas-engine. The air is sucked into the cylinder with a valve, while at the next stroke the air is expelled through another valve. The Lackenby, Dowlais, or Richardson, Westgarth & Co., and Davy blowing engines are commonly used for blast furnaces. Amer. rotary blowers, especially Baker's and Roots's, are used for delivering air at very high pressure. Centrifugal fans can be used in mines, factories, and elsewhere for VENTILATION by exhausting air or for creating compressed air for boiler draught or iron-melting furnaces.

**Blowitz**, HENRI GEORGES STEPHAN DE (1825-1903), Anglo-

Fr. journalist; became chief Paris correspondent of the *Times* in 1875, for which paper he had acted for some time as assistant-correspondent. He soon became a force not only in journalistic but diplomatic circles, and on more than one occasion influenced international affairs. His *Mémoires* were pub. in 1903.

**Blowpipe**, instrument consisting in its simplest form of a tube with mouthpiece and fine nozzle, for blowing air or gas through a flame so as to direct and concentrate it upon a substance and produce a high temperature; used in glass-blowing, soldering, and chemical analysis.

**Blowpipe**, or BLOWGUN, reed pipe used for blowing poisoned arrows by the S. Amer. Indians, Borneo Dyaks, and other savage tribes, and formerly by some of the N. Amer. Indians. The pipes vary from 3 to 11 ft. in length, and the arrows from a few inches to 18 in. The weapon is called by the Indians *puccuna*; by the Dyaks *sumpitan*.

**Bloxwich**, vil., Staffordshire, England (52° 36' N., 1° 59' W.); coal and ironstone mines; ironworks. Pop. (par.) 15,000.

**Blubber**, layers of fat, held by mesh of tissue, beneath skins of whales and other sea mammals; yields oil when pressed and heated, which is used for soap making, leather dressing, and for lubricating delicate machinery, such as watches and typewriters.

**Blücher**, GEBHARD LEBERECHE VON (1742-1819), Prince of Wahlstadt, Prussian general; one of leaders of Prussian war-party (1805-6); became commander-in-chief of Silesian army during

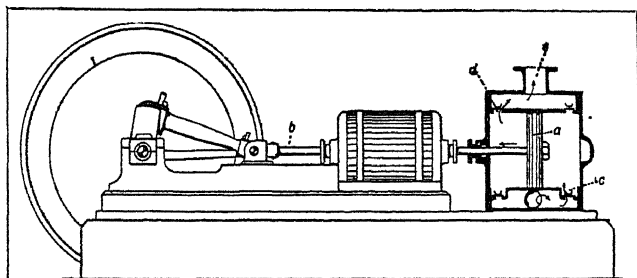


Fig. 1

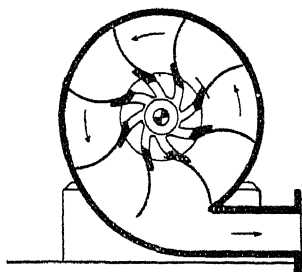


Fig. 2

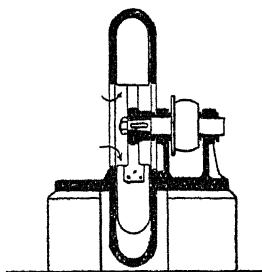


Fig. 3

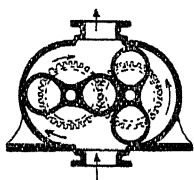


Fig. 4

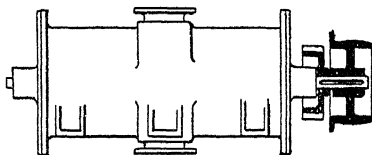


Fig. 5

### *Blowing Machines.*

Fig. 1. Blowing cylinder—*a*, piston; *b*, piston rod of steam-engine; *c*, air inlet valve; *d*, outlet valve; *e*, blast main. Fig 2. Centrifugal fan, side elevation (section); Fig. 3, end elevation (section). Fig. 4. Roots's rotary blower (section); Fig. 5, elevation.

War of Liberation; appointed a general field-marshal (1813); won action of Laon (March 1814); defeated by Napoleon at Ligny (June 1815); made decisive advance at Waterloo; possessed virtues of dashing cavalry soldier, but was without tactical skill of great commander; naturally shrewd, vigorous, upright character; known as 'old Marshal Vorwärts.'

**Blue**, a primary colour; pigments and dyes are of various shades—viz., ultramarine, cobalt blue, indigo and Prussian blue, besides large number of compounds from coal-tar products. Laundry blue consists of ultramarine, 60 parts; bicarbonate of soda, 40 parts; glucose, 12 parts. Liquid laundry blue: indigo or Prussian blue, 8 lb.; oxalic acid 1 lb.; water, 32 gal.

**Bluebeard**, name of monster in Charles Perrault's tale of *Barbe-Bleue* in his *Histoires et Contes du Temps passé* (1697) who possesses a forbidden chamber into which successive wives have looked and been murdered. Variants of the same *motif* appear in Breton, Basque, German, Norse, and Celtic folk-tales. *Opéra bouffe* by Offenbach (1866).

**Bluebell**. See HAREBELL.

**Blue Bird** (*Sialia Wilsoni*), common N. Amer. bird of thrush family; sky-blue with brownish breast; soft, melodious warble; nearest Amer. approach to Brit. robin; also name of Ind. *Irena puella* (family Pycnonotidæ)

**Blue Books**. This term usually includes all documents pub. by direction of Brit. Parliament, because generally bound in blue paper covers. More particularly,

term refers to reports of government commissions of inquiry, diplomatic documents, and consular reports.

**Blue-bottle Flies**. See under HOUSE FLY.

**Bluecoat School**. See CHRIST'S HOSPITAL.

**Blue Cross**, war fund started (1914) by 'Our Dumb Friends League' for wounded and disabled horses. By arrangement with Fr. Ministry of War, Blue Cross funds were devoted to Fr. horses, funds for British horses being raised for the purpose by the Royal Soc. for the Prevention of Cruelty to Animals.

**Bluefields**, or BLEWFIELDS, seapt., Nicaragua (12° N., 83° 25' W.); bananas. Pop. over 5,000.

**Blue-fish** (*Temnodon saltator*), also called 'skip-jack,' belongs to family of horse-mackerel; widely distributed but common on N. Amer. shores; most rapacious; prized as a delicate food.

**Blue-gowns**, or KING'S BEDESMEN, a class of professional Scot. mendicants drawing a small pension from the crown, for which they were expected to pray for the royal welfare. They wore blue gowns and metal badges, and were permitted to beg throughout the kingdom. The last blue-gown was appointed in 1833.

**Blue Grass**, certain species of genus *Poa*, foliage bluish green; *P. pratensis* found in 'blue-grass' region of Kentucky.

**Blue Ground**, matrix of S. African diamonds.

**Blue Gum**, tall Australian tree, *Eucalyptus globulus*; grows 200–350 ft.; source of eucalyptus oil; introduced into India, S. Africa, S. Europe, etc.

**Blue John Mine**, extensive limestone cave, N. Derbyshire, England ( $53^{\circ} 21' \text{ N.}$ ,  $1^{\circ} 47' \text{ W.}$ ); produces a purple nodular fluor-spar, of which vases and ornaments are made.

**Blue Mountains.** (1) Mt. range, New S. Wales, Australia ( $30^{\circ} 46' \text{ S.}$ ,  $151^{\circ} 50' \text{ E.}$ ). (2) Range, Oregon, U.S. ( $45^{\circ} \text{ N.}$ ,  $117^{\circ} 45' \text{ W.}$ ). (3) Ridge, E. Jamaica ( $18^{\circ} \text{ N.}$ ,  $76^{\circ} 40' \text{ W.}$ ). (4) Range, Pennsylvania, U.S. ( $40^{\circ} 30' \text{ N.}$ ,  $75^{\circ} 35' \text{ W.}$ ).

**Blue Pill**, or MERCURY PILL, the *Pilula hydrargyri* of the Brit. Pharmacopœia, contains a third by weight pure mercury.

**Blue Ribbon.** (1) Part of insignia of the Order of the Garter. (2) Any token of supreme honour. (3) A badge adopted in 1883 by Blue Ribbon Army (total abstainers), founded in 1878.

**Blue Shark** (*Carcharias glaucus*), most common in tropical seas; occasionally off S. coast of England; blue above, and white below; sometimes 25 ft. in length.

**Bluestocking**, a pedantic woman. The term was first applied, during the Johnsonian period, to men and women who met to discuss literary subjects; one of them, Benjamin Stillingfleet, usually wore blue stockings. The name was later given only to women of literary pretensions.

**Blue Stone**, BLUE VITRIOL, or COPPER SULPHATE ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ); large deep blue crystals, soluble in water; prepared from copper pyrites or by action of sulphuric acid on copper; used in agriculture for destroying parasites, in copper colours production, medicine, etc.

**Blue Suns**, refer to blue, green, silvery, and coppery colours seen in tropical regions after eruption

of Krakatoa in 1883, due to fine dust haze. See BISHOP'S RING.

**Bluethroat**, also 'bluebreast,' or 'Swedish nightingale,' small bird closely allied to redstart, with bright blue throat; genus *Cyanecula*; variety *C. suecica*, the red-spotted bluethroat, visits this country as a migrant.

**Blum**, HANS (1841–1910), Ger. politician and writer; ed. *Die Greuzboten* (1871–8); his works include *Ueberbände* (1904) and *Lebenserinnerungen* (1907).

**Blum**, ROBERT FREDERICK (1857–1903), Amer. artist, noted for black-and-white drawings in the *Century*, *St. Nicholas*, and *Scribner's Magazines*, particularly of Jap. subjects. He was well known as a colourist, and executed some fine pictures of Venetian subjects.

**Blumea**, genus of annual or perennial herbs and shrubs of Composite family; found in tropical and sub-tropical regions of Old World; camphor is distilled from leaves and tips of shoots, and used for making finer qualities of ink in China.

**Blumenau**, German colony (founded 1850) and tn., Brazil ( $26^{\circ} 55' \text{ S.}$ ,  $49^{\circ} 4' \text{ W.}$ ); cereals, coffee, etc. Pop. (colony) 30,000; (tn.) 7,000.

**Blumenbach**, JOHANN FRIEDRICH (1752–1840), Ger. naturalist, prof. of natural history, anatomy, and medicine at Göttingen; founded science of anthropology, and influenced almost all natural sciences; pub. *Handbuch der Naturgeschichte* (1780), etc.

**Blumenthal**, JACQUES (1828–1908), musical composer, best known as a song-writer; instructed Queen Victoria.

**Blunderbuss**, an obsolete type of gun, with large, bell-shaped barrel, loaded with a charge capable of scattering widely its complement of balls and slugs. Introduced into England during reign of Charles II.

**Blunt**, WILFRID SCAWEN (1840- ), Eng. poet, traveller, and publicist; travelled with his wife in N. Africa, Arabia, and Mesopotamia; upheld Arabi Pasha (1882) and opposed the coercion régime in Ireland (1887-88); has written fine sonnets as well as lyrical verse; pub. *Poetical Works*, *Secret History of British Occupation of Egypt*, *The Land War in Ireland*; and *My Diaries* in 1919. His wife, LADY ANNE BLUNT, a grand-daughter of Lord Byron, wrote *Bedouins of the Euphrates* and a *Pilgrimage to Nejd*.

**Bluntschli**, JOHANN KASPAR (1808-81), Swiss jurist, native of Zürich, but migrated to Germany; prof. of constitutional law at Munich (1848) and Heidelberg (1861); helped to organize Ger. House of Representatives (1862), and to found Ghent Institute of International Law (1873); represented Germany at Brussels conference on laws of war (1874); wrote *Prize Rights in War*, *The Theory of the State*, etc.

**Blushing**, a transient red coloration of the face and neck by a dilatation of the vessels; associated with emotional condition such as self-consciousness, pride, or shame; caused by sudden activity of vaso-dilator nerve-centre of area affected.

**Blyth**, seapt., Northumberland (55° 7' N., 1° 30' W.), 9 m. S.E. of Morpeth; exports much coal; shipbuilding. Pop. over 30,000.

**B.M.**, Bachelor of Medicine (also M.B.).

**B.Met.**, Bachelor of Metallurgy.

**B.Mus.**, Bachelor of Music (also Mus.Bac.).

**B'nai B'rith**, ORDER OF, a Jewish organization, founded at New York in 1843, for helping distressed Jews.

**B.N. Powder**, a Fr. smokeless powder made of 70 per cent. nitrocellulose, 19 per cent. barium nitrate, and 8 per cent. potassium nitrate; it is a modification of Poudre B.

**Boa**. See under SNAKES.

**Boabdil**, more correctly ABU ABDALLAH (1482-92), King of Granada; was the last of the Moorish kings; surrendered the city to Ferdinand and Isabella (1492); killed in Africa.

**Boadicea** (d. A.D. 62), Brit. queen; her husband Prasutagus ruled the Icenii tribe, inhabiting portions of Norfolk and Suffolk, and upon his death his dominions were seized by the Romans. Roused by the indignities she and her people had suffered, Boadicea raised an army and seized in turn Colchester, St. Albans, and London, slaughtering some 70,000 of the invaders. She was eventually defeated by the Roman governor Suetonius, and put an end to her life by poison.

**Boanerges** ('Sons of Thunder'), name given to disciples James and John, the sons of Zebedee, by Jesus (Mark 3:17); term frequently applied to vehement preachers and orators.

**Boar**. See under PIG FAMILY.

**Boarding-out**, a system under the Eng. Poor Law of providing for the maintenance of orphan or deserted children, or those

for whom the guardians of the poor have made themselves responsible; under administration of Local Government Board.

**Board of Trade Unit**, or B.T.U., unit of commercial electrical supply equivalent to 1,000 watt-hours; equivalent to 1.34 h.p. acting for one hour, since  $746 \text{ watts} = 1 \text{ h.p.}$   $\text{Volts} \times \text{amperes} \div 1,000 = \text{no. B.T.U.'s received in an hour.}$

**Boards of Agriculture, Education, Trade, Works, etc.** See AGRICULTURE, EDUCATION, TRADE, WORKS, etc.

**Boas**, FRANZ (1858– ), Ger. Amer. anthropologist; has made a special study of the Indians of British Columbia.

**Boat**, as distinct from 'ship,' any small water-craft which is usually propelled by oars; boat may sometimes make use of sails or motor, and, strictly speaking, the word 'ship' is only applied to a large, three-masted, square-rigged vessel. Primitive man possibly tried first to cross water-spaces by means of rafts, and, in course of time, superimposed a platform; then he would attempt to protect the sides of his craft by raising a plank-shelter; later he would see the need of making his bow pointed, and rounding his stern. Between primitive rafts and built boats came the 'dug-out'—i.e., a large tree-trunk hollowed out by rude implements or fire. Boats are innumerable in form, and modern boat-building is a highly specialized art. Motor boats are now common, and were largely used in coastal operations during the Great War. All boats are either

carvel-built (i.e., when the planks lie edge to edge, presenting a smooth exterior) or clinker-built (when the planks overlap).

**Boatbill**, or BOATBILLED HERON (*Cancroma cochlearia*), broad-billed night-heron, found in the forests along Brazilian rivers.

**Boatswain**, a warrant officer in the navy in charge of boats, sails, rigging, anchors, cables, etc.

**Boa Vista**, name of six towns in Brazil: (1) on riv. Purus (5° 15' s., 62° 54' w.), port; (2) on riv. Madeira; (3) on riv. Tocantins; (4) on riv. Branco, cattle raising; (5) in Minas Geraes; (6) in Pernambuco, cotton.

**Boavista**, or BUENAVISTA, the most easterly of Cape Verde Is. (16° n., 23° w.); cap. Porto Sal-Rei. Pop. 5,000.

**Boaz**, a Bethlehemite, who married Ruth (see the Book of Ruth, and 1 Chron. 2: 12–15); Boaz was an ancestor of David.

**Bobbili**, tn., Madras, India (18° 34' n., 83° 23' e.); sustained three desperate assaults from French (1756). Pop. 17,300.

**Bobbinite**, a mild explosive used for blasting in coal mines; a black powder mixture of potassium nitrate (65 per cent.), charcoal (19.5 per cent.), sulphur (2.5 per cent.), starch (8 per cent.), paraffin wax (3 per cent.).

**Bobbio**. (1) Tn., episc. see, Pavia, Italy (44° 47' n., 9° 24' e.); abbey founded by St. Columbanus (612); old cathedral. Pop. 5,000. (2) Vil., Piedmont, Italy (44° 49' n., 7° 5' e.); noted settlement of Waldenses.

**Bobolink**, or RICE-BUNTING (*Dolichonyx oryzivorus*), N. Amer. bird, famous for its song, powers of flight, and flavour of its flesh;

related both to the buntings and to the family Icteridæ.

**Boborykin**, PETER (1836- ), Russian novelist and dramatist, a follower of Turgenev; author of *The Solid Virtues*, *The Turning*, *The Half of Life*, etc.; and dramas: *The Little Noble*, *Doctor Moschkoff*, *The Child*.

**Bobr**, riv., Poland, joining Narev (53° 8' N., 22° 26' E.); formed the Russian line in Great War (Feb.-Aug. 1915).

**Bobrinets**, tn., Kherson, Ukraine (48° 4' N., 32° 9' E.); manufactures tobacco; flour mills; large retail trade. Pop. 15,000.

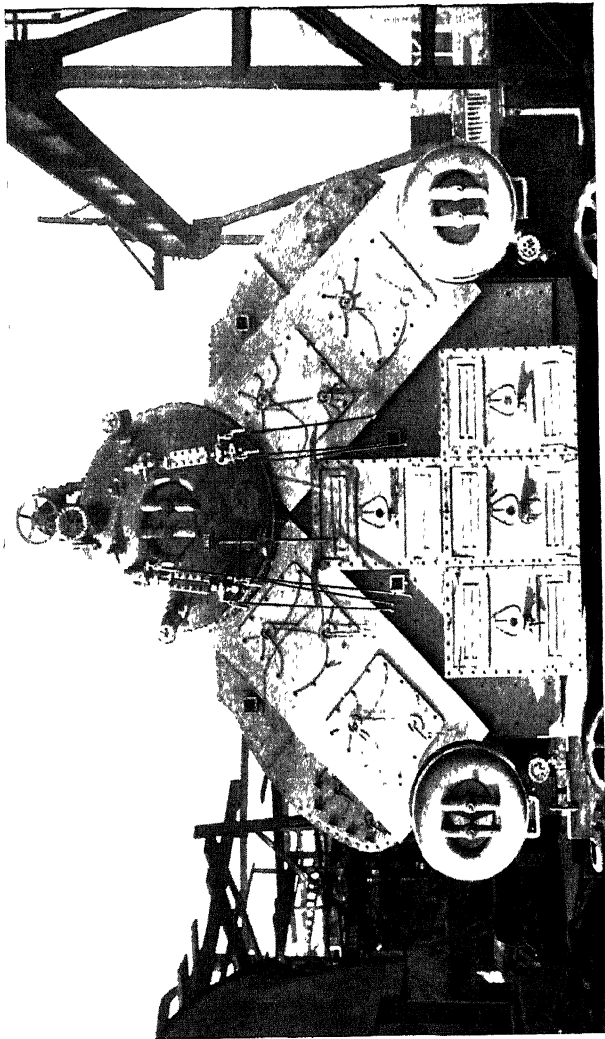
**Bobruisk**, tn., Minsk, Russia (53° 9' N., 29° 12' E.); flour mills, foundries; river trade in grain, timber; disastrous fire (1902). Pop. 35,200.

**Bocage**, MANOEL MARIA BARBOSA DU (1765-1805), Port. poet, second only to Camoens; excelled in the sonnet; his *Obras Poeticas* appeared in 1875.

**Bocas del Toro**. (1) Prov., Panama; banana production; tropical agriculture; fishing. Pop. c. 22,000. (2) Cap. of above (9° 25' N., 82° 12' W.); exports bananas, coco-nuts. Pop. 10,000.

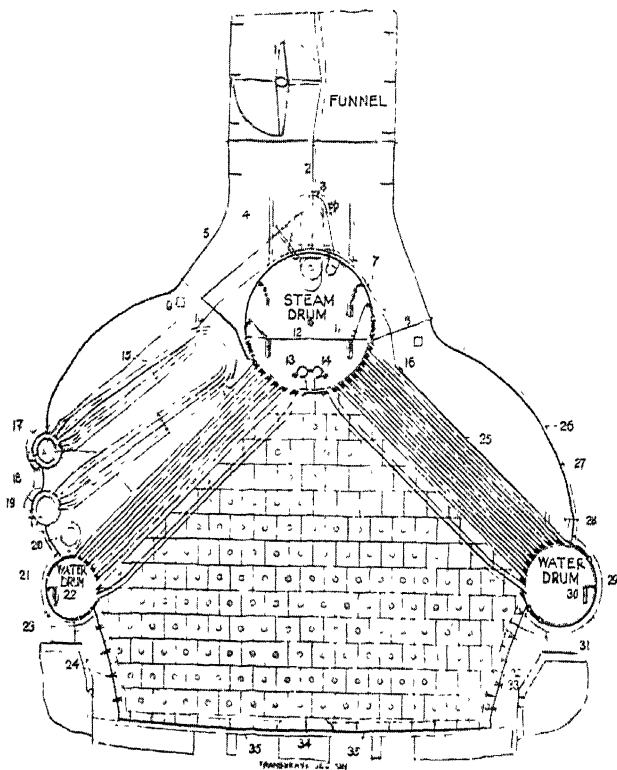
**Boccaccio**, GIOVANNI (1313-75), Ital. poet, novelist, and scholar, the natural son of a Florentine merchant, was born, according to his own statement, at Certaldo, near Florence. Disliking commerce, he was trained for the law, but eventually went to Naples, where he witnessed the poetical examination of Petrarch by King Robert. At Naples he commenced to write poetry, became a hanger-on of the court, and fell deeply in love with Maria, the illegitimate

daughter of King Robert of Naples and Sicily, whom he afterwards celebrated in his writings under the name of Fiammetta. His love for this lady undoubtedly inspired his best efforts, and it was at her desire that some of his earlier works were written—*Filocolo*, the *Ameto*, and *Fiammetta*. Boccaccio disliked Florence, and spent most of the years of his early manhood about the Neapolitan court, during which period he produced many works in prose and verse. In 1350, however, he returned to Florence, and largely devoted the next fifteen years of his life to the public service, formed a close friendship with Petrarch, and acted as Florentine ambassador at Rome, Avignon, Ravenna, and Brandenburg. In 1358 he completed his great prose masterpiece, the *Decameron*, upon which he had been engaged for ten years. This work—which in its style combines both the classic and the mediæval—sets forth how, during the plague of 1348, seven court ladies and three gentlemen seek refuge in a country villa, where, to while away the time, they relate tales. These tales number one hundred, and though many of them are very indelicate in subject, the masterly Italian in which they are written serves to give the *Decameron* a place amongst the greatest books the world has seen. It is worth remembering, too, that there is scarcely an Eng. poet of any note, from Chaucer to Keats, Tennyson, and Swinburne, who has not drawn on the stores of Boccaccio.



YARROW'S LATEST PATENT WATER-TUBE BOILER.  
*(See other side.)*





TRANSVERSE SECTION OF YARROW'S WATER-TUBE BOILER  
AS SHOWN ON THE OTHER SIDE.

1 Yarrow Patent Air-cooled Damper 2 Division Plate 3 Portable part of Uptake: Inway of Steampipe Branch 4 Uptake 5 Two Steel Plates with Asbestos between. 6 Air Cock. 7 Foot Rungs 8 Shelving Plate 9 Smoke Observation Window 10 Baffle Plate 11 Zinc Slabs and Trays 12 Working Water Level. 13 Auxiliary Feed Internal Pipe 14 Main Feed Internal Pipe 15 Tube Distance Pieces. 16. Baffle Plate 17 Lagging 18 Super-heater Drums 19 Holes for Expanding Tubes 20 Soot Door on Back Casing 21 Lagging 22 Zinc Slabs and Trays 23 Boiler Foot. 24 Brick Bolts 25. Yarrow Patent Angle Baffles. 26. Stiffening Angles. 27. Side Casing. Two Steel Plates with Asbestos between 28 Soot Door on Back Casing 29. Lagging 30. Zinc Slabs and Trays 31 Boiler Foot. 32 Furnace Side Casing. 33. Stiffening Angles. 34 Brick Pans 35 Asbestos between Pans and Supports

J. A. Symonds, *Boccaccio as Man and Author* (1894); Hutton, *Life* (1910).

**Boccage**, MARIE ANNE FIQUET DU (1710-1802), Fr. author, patronized by Voltaire; her *Lettres sur l'Angleterre, la Hollande et l'Italie* are still of interest.

**Bocca Tigris**, forts at mouth of Canton R., S.E. China (22° 48' N., 113° 43' E.); taken by British in 1841 and again in 1856.

**Bocchus** (c. 106 B.C.), King of Mauretania (Morocco); of a vacillating and treacherous nature, he sought favour with the Romans by giving his father-in-law, Jugurtha, a prisoner into their hands (106 B.C.).

**Bochart**, SAMUEL (1599-1667), Fr. scholar; was a noted authority on Oriental languages, and wrote, amongst other works, *Hieroicoicon*, a treatise on scriptural and fabulous animals.

**Boche**, or BOSCHE, Fr. slang for a German; synonym for barbarian. Was largely adopted by Brit. soldiers in France, though not so popular in Britain as the sobriquet 'Hun.' The term, in use before the Great War, has now practically become regularized.

**Bochmann**, GREGOR VON (1850- ), Russian painter. Among his best-known works are: *A Church in Esthonia*, *Dockyards in Holland*, *The Fish Market at Revel*.

**Bochnia**, tn., Galicia, Poland (50° N., 20° 30' E.); has salt and gypsum mines. Pop. 11,000.

**Bocholt**, tn., Westphalia, Germany (51° 50' N., 6° 35' E.); woollens, machinery; iron foundries, etc. Pop. 26,400.

**Bochum**, tn., Westphalia, Germany (51° 29' N., 7° 14' E.);

on Ruhr coal basin; steel and iron works. Pop. 137,000.

**Bockenheim**, industrial suburb of Frankfurt-on-Main.

**Böckh**, PHILIPP AUGUST (1785-1867), Ger. class. philologist; famous for his exhaustive critical edition of Pindar, which established the study of class. metres on a scientific basis and placed him in the front rank of modern scholarship; his other works on the classics were numerous. He also wrote on philosophy.

**Böcklin**, ARNOLD (1827-1901), Swiss artist; famous for his realistic treatment of the weird and of mythological subjects, including *Battle of the Centaurs*, *Prometheus*, *Ulysses and Calypso*, etc. Examples of his work are to be seen in the Basel and Lucerne galleries.

**Bocland** ('book-land'), part of folk-land granted by Anglo-Saxon monarch to the Church or nobles, with consent of Witan, by 'book' (the charter of later times); it is last mentioned in Domesday Book.

**Bocskay**, STEPHEN (1557-1606), prince of Transylvania; led insurrection in Hungary, and was proclaimed prince; supposed to have been poisoned by his chancellor.

**Bod**, most westerly state, Orissa, India (20° 35' N., 84° E.) rice, oil-seeds. Area, 1,264 sq. m.

**Bode**, JOHANN ELERT (1747-1826), Ger. astronomer; he did much to popularize astron.; pub. astronomical almanacs and maps. *Bode's Law* is an empirical formula denoting relative distances of the PLANETS.

**Bodegas**, or BABAHYO, cap., prov. Los Rios, Ecuador (1° 47'

s., 79° 26' w.); riv. port, accessible to large steamers. Pop. 8,000.

**Bodel, JEHAN** (c. 1210), Fr. troubadour; wrote a miracle play, *Le Jeu de Saint Nicolas*, and is believed to have been the author of a *chanson de geste*, *Guiteclin de Sassaigue*, reciting the wars of Charlemagne against Witikind.

**Bodenbach**, town, Bohemia, Czecho-Slovakia (50° 46' N., 14° 12' E.); sweetmeats, textiles, chemicals. Pop. 13,400.

**Bodensee.** See CONSTANCE, LAKE.

**Bodenstedt, FRIEDRICH MARTIN VON** (1819-92), Ger. poet and translator; his *Die Lieder des Mirza Schaffy* (1851) was a volume of original verse with a Persian atmosphere, which met with great success. He wrote on the Elizabethan dramatists, trans. Shakespeare's sonnets, and (with others) a complete edition of the plays (9 vols. 1866-72).

**Bodichon, BARBARA LEIGH SMITH** (1827-91), Eng. educationist, friend of George Eliot.

**Bodin, JEAN** (1530-96), Fr. author, lawyer, and political philosopher; born Angers; king's attorney at Laon (1576); secretary to Duc d'Alençon (1581); pub. several works, of which the most important is the *Six Livres de la République* (Paris, 1576), in which he builds upon the family as the basis of settled government, the supreme embodiment of which is the sovereign.

**Bodle, Scottish copper coin**, worth two pennies Scots, or one-sixth of Eng. penny, issued in reign of Charles II.

**Bodleian Library, Oxford**; the largest univ. library in the world; was founded in 1598 by

SIR THOMAS BODLEY, diplomatist and scholar (1545-1613); took the place of the first univ. collection founded by Humphrey, Duke of Gloucester, and destroyed by Reform Commissioners of Edward VI.; now consists of over 1,000,000 vols. and 40,000 mss., and is entitled to a copy of every book pub. in the U.K.

**Bodley, GEORGE FREDERICK** (1827-1907), Eng. architect; served his articles under Sir Gilbert Scott; A.R.A. (1881); R.A. (1902); designed cathedrals at Washington (D.C.) and San Francisco, college buildings at Oxford and Cambridge, and numerous churches and domestic edifices throughout the country.

**Bodley, JOHN EDWARD COURTENAY** (1853- ), Eng. student of foreign politics, especially of France, on which he has written largely. His most important work is *France* ('The Revolution and Modern France,' vol. i.; 'The Parliamentary System,' vol. ii.; 7th ed. 1907).

**Bodley, SIR THOMAS.** See BODLEIAN LIBRARY.

**Bodmin, tn., Cornwall** (50° 28' N., 4° 42' W.); remains of Franciscan friary; agricultural trade; boots and serges; livestock fairs. Pop. 5,700.

**Bodö, port, Nordland, Norway** (67° 17' N., 14° 25' E.), on Saltenfjord; fish. Pop. 4,800.

**Body.** See ANATOMY.

**Body-snatching** was the disinterring of human bodies by resurrectionists, which arose from the difficulty of obtaining anatomical subjects; traffic was stopped by Anatomy Act (1832). For two infamous perpetrators see BURKE, WM.

**Boece**, HECTOR (c. 1465–1536), Scot. historian; prof. at Montaigu College, Paris, and friend of Erasmus; first principal of Aberdeen Univ. (1494); wrote *History of Scotland*, etc.

**Boedtcher**, LUDVIG ADOLPH (1793–1874), Dan. poet, whose lyrics are best productions of the kind in modern Scandinavia.

**Boehm**, SIR JOSEPH EDGAR (1834–90), Eng. sculptor; A.R.A. (1878); R.A. (1882); executed statues of Queen Victoria (Windsor), Carlyle (Chelsea), Dean Stanley (Westminster), Wellington (Hyde Park Corner), and many others; was appointed sculptor-in-ordinary to Queen Victoria; cr. baronet (1889).

**Boehme**, JAKOB (1575–1624), Ger. philosopher and mystic; son of a peasant. Received little education, and while herding cattle as a boy conceived a profound mystic sense of God in nature, which seemed an intimate revelation. His first work, *Aurora*, was pub. 1612, and similar works followed. The purpose of his studies is to explain the origin of all things, and his writings, which have been trans. into English and numerous other languages, have exercised considerable influence on European thought.

**Bœhmeria**, genus of shrubs and herbs of nettle family (Urticaceæ) comprising some fifty species, generally found in tropics and N. temperate regions; the fibre of several is used for ropes, sailcloth, etc., and one variety produces the fine fabric known as Chinese grass-cloth.

**Boelcke**, CAPTAIN (d. 1916), Ger. airman; b. Dessau, Anhalt; first to practise 'hawk-swoop';

exercised great influence on Ger. air service; credited with a bag of thirty-eight Allied machines; forced down and killed by a Brit. opponent.

**Boeotia**, dist., anc. Greece (38° N., 23° 30' E.), bounded by Phocis, Gulf of Corinth, Attica, and the Euripos; chief city was Thebes, which ranked as third city in Greece; chief riv., Cephissus; chief lake, Copais; plains bounded by mts.; Mt. Helicon in s.w. Thebes was the chief power in Greece in 4th cent. B.C.; lost importance after Macedonian conquest; Boeotia now forms a nomarchy of Greece. Pop. 66,000.

**Boerhaave**, HERMANN (1668–1738), Dutch physician; was successively prof. of med. and bot., prof. of chem., and rector of Leyden Univ., where Peter the Great was one of his pupils; the leading physician of 18th cent., specializing in diseases of the eye.

**Boers**, descendants of Dutch settlers at the Cape, who trekked up-country and founded republic of the Transvaal and Orange River, which became part of British Empire in 1902.

**Boer Wars**. See SOUTH AFRICA and TRANSVAAL.

**Boëthius**, ANICIUS MANLIUS SEVERINUS (c. 480–524), Roman statesman and philosopher; was brought up in Rome; subsequently he won favour of Theodoric the Ostrogoth; became consul in 510. At once a great official and author, he was noted as a philosopher, mechanician, astronomer, and theologian; accused of treason by Cyprian, the *magister officiorum*, towards end of Theodoric's reign, he was put on his trial before the senate, and

condemned; was imprisoned for a year, and while in prison he wrote his famous *De Consolatione Philosophiæ*, which for centuries was one of the great textbooks of moral wisdom. His goods were confiscated, and he himself tortured and put to death in 524; he was regarded as a martyr some centuries after his death. Several theological works have been ascribed to his authorship; he also wrote several commentaries, a text-book on music, and trans. into Latin some of Aristotle's chief works.

*Works of Boëthius* (Peiper, Leipzig, 1871); also T. Hodgkin, *Italy and her Invaders*, iii. (1896).

**Boétie**, ETIENNE DE LA. See LA BOÉTIE, ETIENNE DE.

**Bog**, spongy land covered with and overlaid by mosses; most abundant in flat lands of high latitudes near the sea; formed in old lakes, deserted river loops, subsidences above mines, etc.; often covered with peat; SPHAGNUM moss collected during Great War; known as 'moss' in England (see CHAT MOSS, etc.; ALLEN, BOG OF).

**Bogardus**, JAMES (1800-74), Amer. mechanician; invented the dry gas meter, and instruments for deep-sea soundings, making postage stamps (Brit. Government's prize, 1839), engraving medals, pressing glass, etc.

**Bog Bean**, BUCK BEAN, or MARSH TREFOL (Menyanthes trifoliata), belongs\* to the Gentian order; found in Britain in marshy places, and perennates by means of rhizomes; its flowers of pink and white suggest the hyacinth.

**Bögh**, ERIK (1822-99), Dan. dramatist and journalist; besides dramatic works produced

volumes of verse; ed. *Folkets Avis* (1860-77), the most popular journal in Denmark.

**Bogie**, a platform or small truck mounted on two or four wheels used as support to front or rear of a locomotive or railway car; ends of locomotive rest on bogie, to which they are attached by vertical pivot.

**Bog Iron Ore** is spongy and porous or compact earthy deposits of limonite, intermixed frequently with ferrous carbonate, formed under bogs, etc.

**Bognor**, seaside resort, Sussex, England (50° 46' N., 0° 41' W.); fine sands. Pop. 8,100.

**Bogo**, seapt., Cebú, Philippines (11° 4' N., 123° 55' E.); good harbour. Pop. 15,000.

**Bog Oak**, found in peat bogs, is valued for making furniture and ornaments.

**Bogodukhov**, town, Kharkov, Ukraine, Russia (50° 11' N., 35° 31' E.); mrkt. gardens; tanning industry. Pop. 12,100.

**Bog of Allen**. See ALLEN, BOG OF.

**Bogomiles** (Slav., 'beloved of God'), sect dating from perhaps the 10th cent., founded by 'pope' Bogomile. In 12th cent. its apostle was the monk Basilus, who was burnt as a heretic and whose followers were persecuted. Their conception of the Trinity was Sabellian, and they opposed the Church and her sacraments, and the worship of saints and images. This ascetic sect flourished especially in Bulgaria.

**Bogong**, MOUNT, summit (6,508 ft.) of Australian Alps, Victoria (36° 43' S., 147° 30' E.).

**Bogorodsk**, tn., Moscow, Russia (55° 50' N., 38° 27' E.);

textile mills; chemicals. Pop. 12,000.

**Bogotá**, cap., Colombia, S. America ( $4^{\circ} 35' \text{ N.}$ ,  $74^{\circ} 13' \text{ W.}$ ); cathedral, capitol, observatory, library, univ., and museum; archbishopric; subject to earthquakes; founded by Quesada (1538) on plateau 8,000 ft. above sea. Pop. 140,000.

**Bog Plants** include such as are suited to soil and water which are rich in acid contents derived from decay of previous vegetation. The soil is 'sour,' and the acid checks absorption by roots, so that the plants are structurally adapted to dry conditions. The true bog plants include the carnivorous sundews and butterworts, bog asphodel, bean and myrtle, along with sphagnum moss, a typical bog-former which permits the presence only of such plants as can keep pace with its upward growth.

**Bogue**, DAVID (1750-1825), Scot. Congregational minister; one of founders of London Missionary (1795), the British and Foreign Bible, and the Religious Tract Societies.

**Bogutschütz**, tn., Silesia (Plebiscite Area),  $50^{\circ} 16' \text{ N.}$ ,  $19^{\circ} 4' \text{ E.}$ ; zinc smelting; coal. Pop. 22,900.

**Bohea**. See TEA.

**Bohemia**, western land of Czecho-Slovakia ( $48^{\circ} 35' - 51^{\circ} \text{ N.}$ ,  $12^{\circ} 6' - 16^{\circ} 50' \text{ E.}$ ); bounded N. and W. by Germany, S. by Austria, E. by Moravia. Surface is undulating plateau with slight northern slope, surrounded by mountain ranges, N.E. by Riesengebirge, N.W. by Erzgebirge, S.W. by Bohemian Forest, S.E. by Bohemian and Moravian Mts.; drained by Elbe and tributaries,

chief being Moldau, Iser, and Eger.

Climate is genial in valleys, cold in upper districts. About one-third of surface forested; over half cultivated; chief crops, wheat, rye, barley, oats; flax, hops, fruit, beet produced; hops important for beer manufacture, and beet for sugar. The chief mineral is lignite; black coal, iron ore, silver, gold, antimony, zinc, tin, graphite, lead, sulphur also produced; manufactures include sugar, woollens, carpets, cottons, linen, silk, gloves, glass, buttons, bottles, porcelain. There are mineral springs at Carlsbad, Marienbad, Franzensbad, Teplice, Johanniskbad, Bilin, Sedlitz. Bohemia imports agricultural machinery and road-rollers from U.K., tools from Germany. Cap. Prague. Area, 20,065 sq. m.; pop. 6,770,000, of whom over 5,000,000 are Czecho-Slovaks, the remainder Germans.

*History*.—Early inhabitants of Bohemia were Celtic tribe called Boii, conquered by Marcomanni, Teutonic tribe, 1st cent. B.C. Other Teutonic tribes followed; ultimately Czechs, Slavonic tribe, subdued country about A.D. 450. Early history obscure; seems to have been divided into number of small states or princedoms, united for short time under Samo in 7th cent.; came into collision with Charlemagne in 8th cent., becoming tributary to him. Introduction of Christianity occurred in 9th cent. in reign of Borswog, prince of Premyslid dynasty, which ruled Bohemia for 600 years. Kingly title first bestowed on Wratislaws (1088). In 13th cent. Premysl Ottokar II.

extended his dominions; joined Teutonic knights in crusade against Prussia; defeated Hungarians; acquired Carinthia, Istria, part of Italy; ultimately came into conflict with emperor, Rudolph of Habsburg, by whom he was defeated and slain near Marchfield (1278). With his grandson, Wenceslas III., the Premyslid dynasty came to an end (1306). From 1310 till 1437 Bohemia was ruled by kings of Luxembourg dynasty. John of Luxembourg, elected in 1310, went on crusade against heathen in Lithuania, when he lost his eyesight; killed at Crécy (1346). His son Charles (1346-78) founded Prague Univ.; became emperor (1349); issued Golden Bull (1356), regulating election of Ger. king. His son, Wenceslas IV., was involved in struggles with nobles; caused St. John Nepomuk to be drowned, and John Huss, reformer, to be burned; period marked by religious wars, which continued in reign of Sigismund (1419-37), who persecuted Hussites; became emperor; *d.* 1437; succeeded by Albert of Austria, after death of whose posthumous son George of Podebrand was chosen king (1458). George warred against Matthias Corvinus of Hungary; his successor in 1471 was Ladislaus of Poland, in whose reign religious disputes were ended by Peace of Kuttenberg (1485); Bohemia and Hungary united by his election to Hungarian throne in 1490. Reign of Ladislaus' son Louis marked by wars against Turks, who invaded Hungary under Solymán, defeating and killing king at Mohacz (1526). His brother-in-law,

Archduke Ferdinand of Austria, elected 1526; subsequently had himself declared hereditary king; crushed revolt in Prague (1547); became emperor; introduced Jesuits in Bohemia; *d.* 1564. His son Maximilian, emperor and king of Bohemia, tolerated Reformation; and Maximilian's son Rudolph granted Letter of Majesty in 1609, ensuring religious liberty; he was deposed and succeeded by his brother Matthias (1612), whose reign was marked by religious disputes. Matthias died without issue, and his cousin, Ferdinand (Emperor Ferdinand II.), was elected king, but was presently deposed in favour of Frederick the Elector Palatine; whereupon Thirty Years' War broke out. Ferdinand, aided by Bavaria, Spain, Poland, Italy, Saxony, defeated Bohemians at Weissenberg (1620); Elector fled; Ferdinand reinstated; extirpated Protestantism, and re-established Roman Catholicism; suppressed national privileges, promulgated a new constitution, established Habsburgs as hereditary dynasty in Bohemia, history of which henceforth follows that of Austria. (See AUSTRIA-HUNGARY.) On death of Charles VI. (1740), struggle took place between his daughter, Maria Theresa, and Charles of Bavaria—former ultimately successful. Her son, Joseph II., passed Edict of Toleration and established many reforms. In 1849 occurred a quickly suppressed rising in favour of Bohemian independence, after which time there were constant struggles for supremacy between the Czechs and Germans, the former aiming at autonomy. During

Great War Czech and Slovak emigrants organized a Provisional Government at Paris. Revolution on Oct. 28, 1918, and Republic of CZECHO-SLOVAKIA proclaimed Nov. 14, 1918.

*Language and Literature.*—Czech language belongs to Slavonic subdivision of Aryan group; alphabet has forty-two letters, 'ch' being only guttural sound; there are many inflections and prefixes, and few articles and auxiliaries. Earliest period of literature down to time of Huss is represented by various hymns, legends, didactic and satirical poems, trans. of Bible, and Chronicle of Dalimil. Various religious works were written by Huss and his followers, many of which are lost. Greatest age of Bohemian literature was 16th cent.; historian Hajek may be mentioned among writers of that time. Literature greatly influenced by 'Bohemian Brethren,' among whom Comenius (1592-1670) wrote excellent works on education. Modern writers include Vrchlicky, Tomek, and Heyduk. Greatest Bohemian historian is Palacky (d. 1876).

Maurice, *Bohemia* (1896); Lützow, *History of Bohemian Literature* (1899); Nosek, *Independent Bohemia* (1918); Tobolka, *Das böhmische Volk* (1916); Benes, *Bohemia's Case for Independence* (1916).

**Bohemian Brethren.** See under MORAVIANS.

**Bohemian Forest,** range of mts. between Bohemia and Bavaria (48° 40'–50° 28' N., 12° 6'–13° 50' E.); Mt. Arber (4,785 ft.) is chief peak; pine and beech forests; crossed by three rail-

ways and four roads; Passion plays performed at Böhmische-Ersenstein and Hörtitz.

**Bohemond,** name borne by six princes of Antioch, of whom the most important was BOHEMOND I. (1056–1111), the founder of the line. He was the son of Robert Guiscard, and came of Norman stock. One of the leaders of the First Crusade, he showed great gallantry in the capture of Antioch, of which he made himself prince, and was succeeded by five princes of his name. His principality was finally overthrown by the Sultan Bibars in 1268. See Gibbon's *Decline and Fall*.

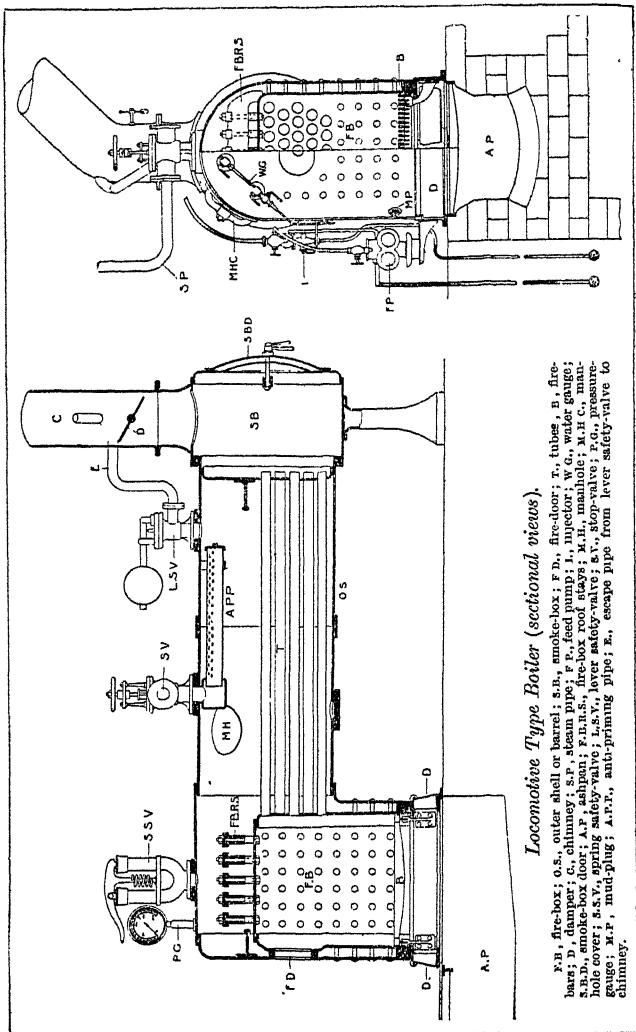
**Böhl de Faber y Larrea, CECILIA FRANCISCA JOSEFA** (1797–1877), Span. novelist, pseudonym 'Fernan Caballero'; chief novel, *La Gaviota*; made first collection of Spanish folk-tales and songs.

**Böhm-Bawerk, EUGEN VON** (1851– ), Austrian statesman, studied law and political science; became prof. at Innsbruck, then finance minister, and has held other important political positions; has contributed in his many works to a clearer realization of what 'production' means in the modern world.

**Bohn, HENRY GEORGE** (1796–1884), Eng. publisher; originally a book-dealer on an extensive scale; became famous with his 'Guinea Catalogue'; commenced, in 1846, to publish the famous 'Bohn Libraries' of standard works in many departments of literature, which extended to nearly 800 vols. He disposed of his copyrights in 1864 to Messrs. G. Bell and Sons.

**Bohol.** (1) Isl., Philippines (10° N., 124° E.); coffee, sugar,





*Locomotive Type Boiler (sectional views).*

F.B., fire-box; S.B., outer shell or barrel; S.B., smoke-box; F.D., fire-door; T., tubes; B., fire-bars; D., damper; C., chimney; S.P., steam pipe; F.P., feed pump; I., injector; W.G., water gauge; S.B.D., smoke-box door; A.P., ashpan; F.R.S., fire-box root stays; M.H., man-hole; M.T.C., mud-hole cover; S.S.V., spring safety-valve; L.S.V., lever safety-valve; S.V., stop-valve; P.G., pressure gauge; M.P., mud-plug; A.P.T., anti-priming pipe; E., escape pipe from lever safety-valve to chimney.

rice, etc. Area, 1,400 sq. m.; pop. 243,150. (2) Prov., Philippines; includes island and dependent islands. Area, 1,614 sq. m.; pop. 269,220 (all civilized).

**Boiardo**, MATTEO MARIA, COUNT OF SCANDIANO (c. 1434-94), Ital. poet; his epic, *Orlando Innamorato* (complete ed. 1495), is the first modern rehandling of the Charlemagne legend, and was the original model for Ariosto's *Orlando Furioso*.

**Boieldieu**, FRANÇOIS ADRIEN (1775-1834), Fr. composer; produced numerous operas and musical pieces which achieved considerable popularity, including *Le Calife de Bagdad*, *Jean de Paris*, *Le Petit Chaperon rouge*, and *La Dame Blanche* (the White Lady of Scott's *Monastery*), which alone survives and unites simple Scot. airs with light and graceful Fr. harmonies.

**Boigne**, BENOIT, COMTE DE (1751-1830), Fr. military adventurer; after serving in the Irish Brigade and the Russian service he went to India, where he became a military leader on side of the Mahrattas, and amassed a great fortune.

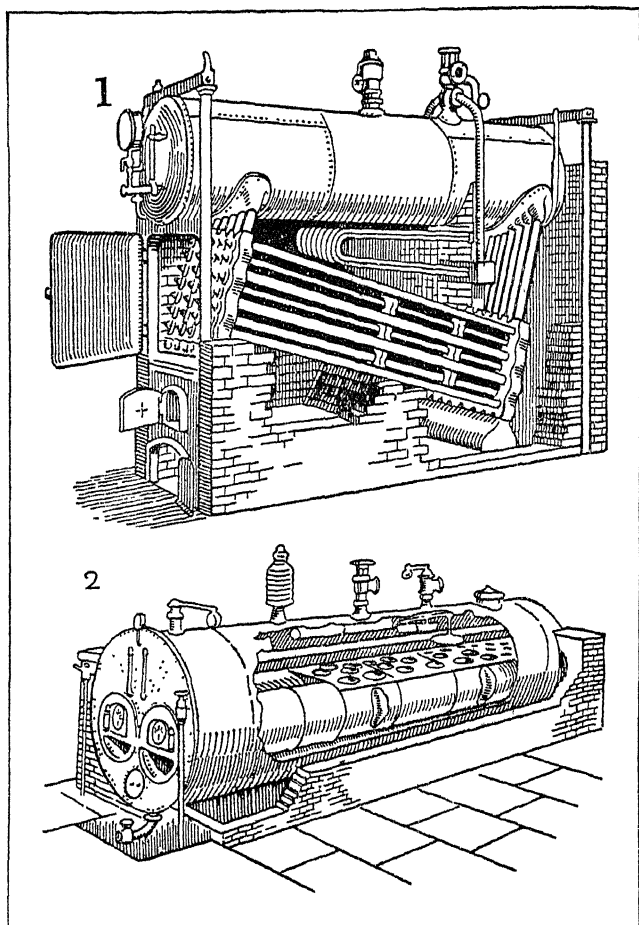
**Boil**, painful inflammation of subcutaneous tissue leading to formation of mass of tissue and pus; micro-organism *Staphylococcus pyogenes* is always present; most efficient method of treatment is to improve the general health.

**Boileau-Despréaux**, NICOLAS (1636-1711), Fr. poet and critic; studied for the Church and for the Bar, but eventually devoted himself to literature, and became arbiter of literary taste in Europe. He continued the work of Mal-

herbe in laying down laws of style which had deterrent effect on original genius, but abundant recognition for their disciplinary uses when not too slavishly followed. He became, in 1677, joint historiographer-royal with Racine. His poems, including the mock-epic *Lutrin*, are distinguished by their correctness of form. His most important work was his *Art Poétique* (1674) (both precept and example), in which he discussed in a most exhaustive manner the canons of verse; vigorously defended the usages of the ancient classic writers against the 'moderns' in the famous *Querelle*. Both his poetry and his criticism exercised considerable influence on the work of Pope and other Eng. authors; Pope's characteristic excellences, ease, neatness, and point are also Boileau's.

*Complete Works* (Eng. trans.), 1712; Lanson, *Boileau* (Grands Ecrivains).

**Boiler**, vessel in which a liquid is heated to the boiling point, and especially that part of a steam engine used for generating steam from water. When the boiler is open, the temperature of the steam remains at or near 212° F., and the pressure is that of the atmosphere—about 14·7 pounds to the square inch. In a closed boiler the temperature and pressure may be varied greatly, being limited only by the strength of the boiler. The main considerations determining the form of a boiler are ability to resist internal pressure and efficiency in producing steam. The spherical form was the earliest used, and is the strongest;



*Two Types of Boiler.*

1. Babcock and Wilcox Boiler. 2. Galloway Boiler (longitudinal section).

but it presents to the fire a minimum of surface in proportion to its contents, and therefore its steam-producing efficiency is low. The cylindrical form is in general use.

Boilers may be divided into two great classes: *tank* boilers, containing large quantities of water, and *water-tube* boilers, in which the water for heating is mostly contained in a number of small tubes.

Water-tube boilers are used when high steam pressures are required; they raise steam very rapidly, and permit the maximum power to be obtained with the minimum weight in the minimum space. There are numerous forms used for both stationary and marine engine work. The Belleville boiler of this class was largely adopted in the Brit. navy, but was unfavourably reported on by the Boiler Committee of the Admiralty in 1901. In the Babcock and Wilcox boiler, now largely in use in the navy, a series of tubes is placed over a fire-grate and inclined at an angle of 1 in 4. The tubes are joined at their ends by wrought-steel connecting boxes or headers to one another, and also to a horizontal drum or receiver on the top; the tubes are 'staggered,' or so placed that each horizontal row comes over the spaces in the previous row. The steam and water rise from the generating tubes through the upper headers into the receiver, where the steam separates from the water, which returns down the pipes at the back into the back headers, thus completing the circulation. A continuous and rapid

circulation is thus kept up, and a nearly uniform temperature is maintained throughout the boiler. A mud-collector is fixed at the lowest point of the inclined tubes, to receive any impurities from the water. The openings for cleaning opposite the end of each tube are closed by hand-hole plates, which are held in place by wrought-steel clamps and bolts. In the illustration of this boiler a superheater is shown immediately above the inclined tubes. It consists of a number of solid drawn steel tubes bent into U-shape, and is connected at the ends with boxes, the upper one receiving the natural steam from the boiler, the lower one collecting the superheated steam after it has traversed the superheater tubes and delivering it to a valve placed above the boiler. Steam, when superheated, has a higher temperature than the water from which it was evaporated. Water cannot exist in the presence of superheated steam, it robs the steam of its extra heat, and is itself evaporated into steam. By superheating the steam the loss due to condensation, not only in the pipes, but in the engine cylinder, is greatly diminished. The Babcock and Wilcox boiler has been largely employed for land purposes, and particularly for electric light and power work.

Impurities in the feed water become concentrated by evaporation and encrust the boiler surfaces, making regular cleaning necessary, or the use of BOILER COMPOSITIONS. When the water is very impure, boilers of the 'Lancashire' or other similar type are most suitable, as they

are easy of access for cleaning. If water-tube boilers are used the water must be softened and filtered. The steam from engines may be condensed and used as feed water, but the oil with it is difficult to get rid of. The majority of boilers are usually hand fired, as mechanical stokers are not yet altogether satisfactory. The draught for combustion is either natural, by chimney, or forced. A forced draught may be obtained by driving in air by fans and permitting it to escape only through the fires, or, as in locomotives, by the blast of the exhaust steam.

**Boiler Compositions**, or **ANTI-INCORUSTATORS**, are compounds which are sometimes added to water in boilers to prevent the deposit of incrusting substances from soluble material contained in the water, as supplied. Many patented compounds are advertised, the basis of the majority being some form of alkali. They should never be used unless their composition is known, as also that of the water employed.

Caustic soda is often put into boilers. If carbonates are not present in water, washing soda may be added to react with the calcium sulphate present in the water. These substances should not be used in excess.

Tri-basic phosphate of soda, sold as 'tripsa,' is one of the most successful anti-incrustators. It precipitates calcium and magnesium salts as a slimy mud which does not stick to boiler plates, and can be removed. Where possible, water should be softened before admission to the boiler. See **WATER SOFTENING**.

**Boiling.** See **COOKERY**.

**Bois Brûlé.** (1) **BOIS JAUNE BRÛLÉ**, Champagne, France (49° 12' N., 4° 38' E.); captured by French after four days' fighting in March 1915. (2) **BOIS BRÛLÉ**, forest of Apremont, Meuse, France (48° 52' N., 5° 40' E.); occupied by Germans Jan. 1915, but recovered by French in April 1915.

**Bois-Brûlés**, tribe of Manitoban half-breeds numbering about 35,000; also known as *Métis* or half-bloods; rebelled against Canadian Government under Louis Riel (1869), but were defeated.

**Bois de Boulogne**, the great public park of Paris (2,158 ac.); much improved by Napoleon I., and made over to the city by Napoleon III. (1853); contains the Jardin d'Acclimatation (Zoo) and the racecourses of Longchamps and Auteuil.

**Boise**, cap. Idaho, U.S. (43° 38' N., 116° 13' W.); valuable mines. Pop. 17,300.

**Boisgobey**, **FORTUNÉ ABRAHAM DU** (1824-91), Fr. novelist of the school of Gaboriau; wrote sensational detective novels, several of which had extraordinary success as newspaper feuilletons.

**Bois-le-Duc**, French form of **'S HERTOGENBOSCH**.

**Boisserée**, **SULPICE** (1783-1854), Ger. art collector and archaeologist, celebrated for collection of early Ger. pictures now in Pinakothek, Munich.

**Boissevain**, **MRS. (INEZ MULHOLLAND)** (1886-1916), Amer. solicitor; investigated conditions at Sing Sing prison; advocated women's suffrage.

**Boissonade**, **JEAN FRANÇOIS** (1774-1857), Fr. class. scholar,

author of *Anecdota Græca* (1829-33) and *Anecdota Nova* (1844).

**Boissy d'Anglas**, FRANÇOIS ANTOINE, COMTE DE (1756-1826), Fr. statesman; helped to overthrow Robespierre (1794); president of Convention (1795); member of Committee of Public Safety and subsequently of Council of Five Hundred; proscribed Sept. 1797; lived in England until the Consulate; member of Tribunate (1801); senator and a count under Napoleon; cr. peer by Louis XVIII.

**Boito**, ARRIGO (1842-1918), Ital. composer and poet; his opera, *Mefistofele*, was produced at Milan in 1868, but that and his other musical compositions, all slight, though with marked individuality, achieved little success at the time, but, praised by the critics, have been steadily establishing themselves as favourites in Italy and elsewhere. As a writer of libretti he won distinction; author of the books of Verdi's *Otello* and *Falstaff*, Ponchielli's *La Gioconda*, and numerous others; Mus. Doc., Cambridge (1893).

**Bojador**, CAPE, on w. coast of Africa (26° 7' N., 14° 30' W.).

**Bojer**, JOHAN (1872- ), Norweg. novelist, well known for his *Noder Lea* (trans. as *The Sower of a Lie*), *The Great Hunger*, and other realistic studies of Norweg. peasant life.

**Bokelmann**, CHRISTIAN LUDWIG (1844-94), Ger. painter, whose best-known works include *The House of Mourning*, *In the Pawnshop*, *The Opening of the Will*, *The Emigrants* (in the Dresden Gallery), etc.

**Bokhara**. (1) Khanate, Central Asia, with Afghanistan on

s., elsewhere surrounded by provinces of Russia (39° 45' N., 65° E.); conquered by Russia (1868). Rivers are Oxus, Zarafshan, Surkhhab; soil barren, except where irrigated from rivers. W. is hot and dry, with flat surface, fertile through irrigation; produces pasture for stock-rearing, cottons, vines; middle is plateau, producing pistachios, fruits; E. is mountainous, valleys producing cereals, mulberries; sheep, goats, camels, horses, asses raised; silkworms reared. Minerals include salt, sulphur, alum, sal ammoniac; rice, cotton, wheat, barley, tobacco, fruits, etc., produced. Mixed pop., of whom Uzbeqs are most numerous; Mohammedans. Area, 83,000 sq. m.; pop. c. 1,250,000. (2) Cap. of above; has 360 mosques, Mir-Arab being most remarkable: a centre of religion and learning, and chief commercial town of Central Asia; textiles. Pop. 75,000.

**Boksburg**, tn., Transvaal, S. Africa (26° 13' S., 28° 17' E.); gold and coal mining. Pop. 30,000 (whites, 11,600).

**Bol**, FERDINAND (1616-80), Dutch painter and etcher, whose masterpiece is *The Four Regents of the Leprosy Hospital* (Amsterdam town hall). There are four of his portraits in the Louvre.

**Bolan Pass**, narrow gorge (29° 18' N., 67° 8' E.) leading N.W. from the plains of Karachi to the highlands of Sarawan, Baluchistan; is traversed by military road and by railway (1886). Length, 60 m.; summit attains 5,900 ft.

**Bolas**, weapon of S. Amer. Indians; stone balls attached to a hide or hempen rope.

**Bolax**, one of the Umbelliferae, known to science as *Azorella caespitosa*; is the celebrated 'balsam bog' of Falkland Islands.

**Bolbec**, tn., dep. Seine-Inférieure, France (49° 34' N., 0° 28' E.); spinning, weaving, and papermaking. Pop. 11,000.

**Boldrewood**, ROLF (1826-1915), pseudonym of Thomas A. Browne, Anglo-Australian novelist. Novels mostly deal with adventurous colonial life in the early bush-ranging days.

**Bole**, earthy clay-like mineral, consisting of silica, alumina, red iron oxide, and water; occurs in cavities of basaltic igneous rocks; is employed as a pigment.

**Bolero**, Span. national dance, invented 1780; performed with castanets. The name is also applied to the air to which the bolero is danced.

**Boleslas**, BOLESŁAUS, or BOLESŁAW, the name of several early kings of Poland, of whom the most important were: (1) B. I. (d. 1025), called 'the Great,' who made Poland a powerful state, and established a native church. (2) B. II., 'the Bold' (1039-81), exiled in 1079. (3) B. III. (1086-1139), who devoted his life mainly to subjugation of the mar. provs. of Pomerania.

**Boleslav I.** (r. 935-67), Czech King of Bohemia, surnamed 'the Cruel,' freed Moravia from the Magyars, and united it with Bohemia. B. II. (r. 967-99), his son, extended his rule over most of Silesia and Poland, and perhaps part of Hungary. B. III. (r. 999-1002), son of B. II., was driven from his throne by Wladivoj, the Pole, but recovered the crown later, with a dominion

which had been reduced to Bohemia only.

**Boletus**, a genus of many species of mushroom-like fungi, group Polyporaceae; most are edible, and in certain parts of Europe they are preferred to common mushrooms.

**Boleyn** (or BULLEN), ANNE (c. 1507-36), second wife of Henry VIII. of England, and niece of Duke of Norfolk. Her father was Sir Thomas Boleyn, cr. Earl of Wiltshire and Ormonde (1529). Henry married her secretly about Jan. 25, 1533; subsequently their marriage was declared valid, and Anne was crowned (June). Birth of a daughter (Sept. 1533), instead of desired son, disappointed Henry, who soon tired of his arrogant, flighty, voluptuous wife. Anne was imprisoned in the Tower (May 2, 1536) on charges of flagrant immorality, condemned and sentenced (May 15), and beheaded (May 19) on Tower Green.

**Bolgrad**, tn., Bessarabia, Rumania (45° 40' N., 28° 39' E.); trade in grain; brick making; tallow factories. Pop. 12,000.

**Bolimov**, vil., Poland (52° 4' N., 20° 10' E.), on the Ravka, 40 m. s.w. of Warsaw, was the scene of violent attacks by the Germans during their third assault on Warsaw (Jan. 1915).

**Bolingbroke**, HENRY ST. JOHN, VISCOUNT (1678-1751), English statesman and writer. Entering Parliament (1701), he attached himself to Harley, becoming war secretary (1704), and secretary of state (1710). Created Viscount Bolingbroke (July 1712), he proceeded to France to conduct peace negotiations, and had

a responsible share in the memorable negotiations which resulted in the Peace of Utrecht (March 31, 1713). Gradually superseding Oxford in the leadership, Bolingbroke was supreme after Oxford's retirement (July 1714), but his plans for a Jacobite restoration were upset by Queen Anne's sudden death (Aug. 1) and the election of 1715, which put the Whigs in power. Dismissed from office on accession of George I., Bolingbroke joined the Pretender in France, but, having received pardon (1723), he returned to London; was received coldly by Walpole, and organized opposition in conjunction with Pulteney. Success seemed imminent when the king died (1727). Bolingbroke subsequently joined opposition round Frederick, Prince of Wales, but returned to France (1734). After death of father (1742) he returned to England. As a statesman he was unscrupulous, playing the persecutor for his party while in power, and the mere faction leader when out of it. He was an eloquent and plausible debater. His writings include the *Patriot King*, which inspired the political ideas of Bute and George III. *Life*, by Hassall (1889).

**Bolintineanu, DIMITRI** (1826-72), Rumanian poet, supported in his poems the cause of the people, and fought against the boyar tyranny. He was minister of public instruction under Prince Cuza. A French translation of his poems is *Brises d'Orient*.

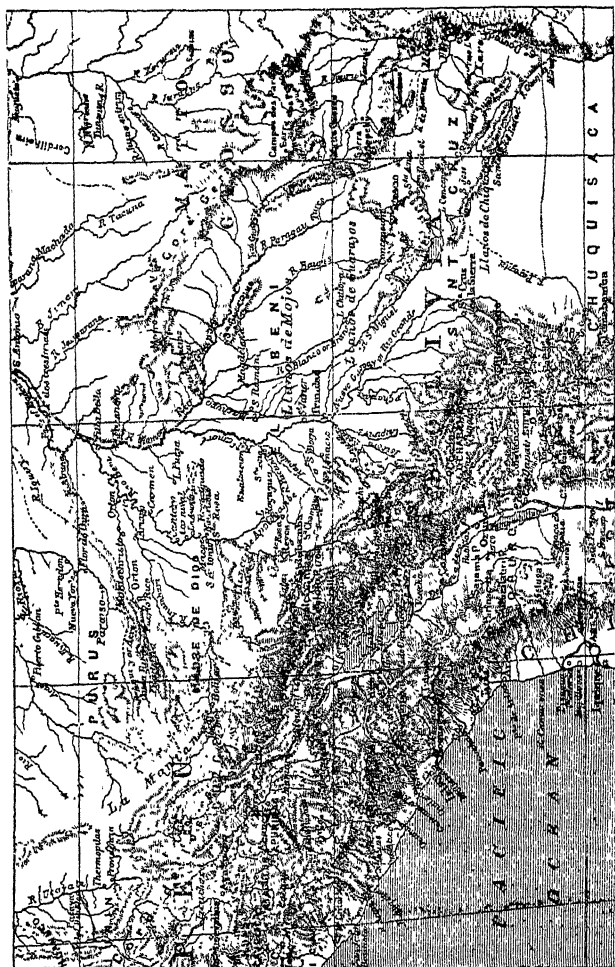
**Bolívar.** (1) State, Venezuela (3° 50'-8° 20' N., 60° 38'-72° 30' W.); rubber, copaiba, balsam, tobacco, coffee; gold is found.

Area, over 90,000 sq. m.; pop. 50,000. (2) Prov., Ecuador, S. America (1° 38' S., 79° 10' W.); coffee, tobacco, cereals grown; mostly forest. Pop. 53,000.

**Bolívar, SIMÓN** (1783-1830), S. American patriot, known as 'the Liberator'; born at Caracas, Venezuela; associated himself with cause of independence of Span. colonies in S. America; aided rebellion at Caracas (April 1810), and was commissioned colonel by the revolutionary convention. Venezuela declared its independence (1811); war began (1812). After varying success, Bolívar defeated Spaniards at Barcelona (Feb. 1817), won victory of Boyaca (Aug. 1819), and finally routed Spaniards at Carabobo (1821). Venezuela and New Granada were united to form 'Republic of Colombia,' under Bolívar's presidency (1821). He also liberated Ecuador and Peru; Upper Peru became a separate state, called BOLIVIA, in honour of Bolívar, who became dictator. Bolivian code was adopted as constitution of Peru, and Bolívar declared president for life (Dec. 1826). In his later days he was spoken of as a Washington who had spent his energies and his wealth to secure the liberties of his countrymen. *Life*, by Petre (1910), and Mancioni (1912).

**Bolivia**, inland republic, S. America (8°-22° 54' S., 57° 42'-73° 15' W.); bounded N. and E. by Brazil, S. by Paraguay and Argentina, W. by Chile and Peru. W. consists of plateaus lying between Andes and Cordillera Real to E.; of these Oruro plateau (with Lakes Titicaca and Poopo) is 13,000 ft. above sea-level;





*Bolivia.*

southern part lower, a sandy or salt-covered desert; along N.E., hills sink rapidly, and on E. by series of terraces to northern and eastern plains; former drained by Beni and Mamore to Madeira, latter by Paraguay; other rivers are Guaporé, Purus, etc. Chief mountains are Bolivian Andes; there are many active volcanoes. Climate varies with altitude and exposure; higher plateaus have hot days, cold nights; lower plateaus and eastern terraces temperate; upper valleys subtropical; northern and eastern plains tropical. First two regions have wet and dry seasons; elsewhere rain falls all year round. Fauna resembles that of Peru; great variety of birds and insects. Condors and humming-birds occur; wild animals include tapir, jaguar. Chief towns, La Paz, Cochabamba, Potosi, Sucre, Oruro; railway communications poor (c. 1,500 m.); rivers Beni and Mamore are navigable; roads few and bad.

*Resources and Productions.*—Upper plateaus produce potatoes, barley; lower plateaus, wheat, maize; upper valleys, fruits; great plains have luxuriant tropical vegetation. There are grassy savannas in S., valuable timber in N.; rubber, copal, coffee, cocoa, coca, rice, cotton, cinchona, pine-apples, bananas produced; cattle and sheep largely bred; vicuña, alpaca, llama, guanaco, chinchilla are valued for their skins and wool. Minerals include silver, copper, tin, lead, mercury, zinc, antimony, bismuth, gold, borax, coal; many of these await development. Tin is the great source of wealth, silver coming next in importance. Salt and

mineral oil also occur. Chief imports are provisions, wines, spirits, cottons, woollens, silks, linens, clothing, hardware; exports, silver, rubber, tin, wool, hides, cattle, coffee, cocoa.

Inhabitants include Indians, half-breeds, whites, negroes; the white inhabitants are chiefly of Span. descent. Area, c. 600,000 sq. m.; pop. c. 2,200,000.

*History.*—Bolivia seems to have been united with Peru from earliest times, and so remained after Span. conquest of that country; became prov. of Buenos Aires, 1776. Natives were cruelly oppressed under Span. rule, and several risings occurred. In 19th cent. occurred great struggle for independence, in which the natives were aided by people of Peru and La Plata (1809–25). Rebels, under Bolivar, ultimately seized La Paz (1825), and a month later Spaniards were defeated at Potosi, their last remaining prov. Constitution was framed by Bolivar, from whom country was named, in 1826; and Sucre, who had defeated Spaniards at Ayacucho in 1824, became first president of new republic, accepting office for two years only. Since then frequent insurrections and revolutions have occurred, sometimes followed by changes in constitution. In 1879 war broke out with Chile, during progress of which a revolution occurred in Bolivia; war ended in 1883, when treaty was concluded, whereby she lost her coast prov., Antofagasta, to Chile. Most important recent events have been settlement of boundary dispute with Brazil (1903), when Bolivia obtained district on Matto

Grosso frontier and Madeira R., together with £2,000,000, in exchange for Upper Acré and other districts; and confirmation of coast provinces to Chile in 1905, for which she received money compensation. In 1910 Brazil guaranteed to Bolivia in perpetuity navigation of Madeira, Acré, Amazon, and Paraguay.

Constitution, dating from 1880, is republican. Executive vested in president, elected by popular vote for term of four years; legislative, in two chambers, senate and chamber of deputies, members of both elected by people. There are two vice-presidents, and ministry of six departments. Republic is divided into 8 departments, 55 provinces, 437 cantons, and 248 vice-cantons. State religion is R.C., though other faiths are tolerated. Head of church is archbishop, who lives at Sucre. Elementary education is compulsory. Military service compulsory for men between 20th and 50th years.

Wright, *Bolivia* (1907); W. M. Conway, *Bolivian Andes* (1901); Walle, *Bolivia* (1914).

**Bolkhov**, tn., Russia (53° 27' N., 36° E.); trade in cattle, agricultural products; soapworks; cathedral; orchards. Pop. 22,000.

**Boll**, measure of weight and capacity, used in Scotland and N. England; now obsolete; 140 lb. weight made 1 boll; as a measure of capacity it varied with the locality from 2 to 6 bushels. A.S. *boll*, *bolle* = any round vessel, is our 'bowl.'

**Bollandists**, succession of Jesuit writers, so called after the first, JOHN VAN BOLLAND, who (1643) compiled *Acta Sanctorum*.

**Boll Weevil**, a small grey weevil (*Anthonomus grandis*), the most serious pest of cotton in the U.S.; has done damage amounting to 2½ million sterling in one year; no certain remedy.

**Boll Worm**, a caterpillar (*Chloridea obsoleta*, or *Heliothis armiger*) which bores into flower buds and young bolls, causing them to drop; may be killed in young stages by Paris green.

**Bolo Case**, THE. In Sept. 1917, Paul Bolo, a Fr. subject, otherwise known as BOLO PASHA (a title conferred on him by the ex-Khedive), was arrested in Paris on a charge of dealing with the enemy. His trial, early in 1918, was followed with eager interest by all Europe. It transpired during its course that over £400,000 had been placed to his credit in America by the Deutsche Bank for the purpose of creating a movement of opinion favourable to the enemy in the Fr. press; that he had endeavoured to buy shares in the *Figaro* with this end in view; and that he had acted as intermediary between the Ger. government and the ex-Khedive in an endeavour to promote a pacifist movement. Bolo was found guilty, and shot as a traitor at Vincennes (April 17, 1918). His career is one of the most remarkable blends of rascality and charlatanism.

**Bologna**. (1) Prov., Italy; wheat and maize largely grown. Area, 1,448 sq. m.; pop. 578,000. (2) Cap. of above (44° 29' N., 11° 21' E.); cathedral of San Pietro (rebuilt 1605); interesting old churches; two leaning towers, Torre Asinelli and Torre Garisenda (12th cent.); univ. (11th cent.),

museum and picture gallery; railway centre; strategic point; sausages, macaroni are staple products; silk, lace, cloth, glass, preserved fruits, tobacco; part of temporal dominions of Papacy (1506-1860). Pop. 172,600.

**Bologna**, GIOVANNI DA (1524-1608), Fr. sculptor, known as IL FIAMMINGO from birthplace at Douai; lived chiefly in Italy; was employed by Francesco and Cosimo de' Medici; was one of original 40 members of Academy at Florence. His most celebrated work is *The Rape of the Sabines*, in the Loggia dei Lanzi, Florence.

**Bolsena**. (1) Small tn., Rome, Italy (42° 38' N., 12° E.); remains of anc. *Volsinii Novi* (see ORVIETO); here occurred so-called 'miracle of Bolsena' (1263). Pop. 3,300. (2) Lake, Italy (42° 35' N., 11° 55' E.), in centre of volcanic district; 1,000 ft. above sea-level; abounds in fish.

**Bolshevism**, the name given to the institutions and polity inaugurated in Russia by the Soviets under LENIN after the fall of Kerensky's government; and applied, by analogy, to any theory of government which really or apparently substitutes proletarian rule for that of any other class in the community. The word 'Bolshevik' is a neologism which, like 'Soviet,' teaches little. 'Bolshevik,' at one time erroneously rendered by 'Maximalist,' as though connoting an out-and-out revolutionary, ought rather to be 'Majorist,' seeing that the Russian word 'Bolshevik,' from *bolshe*, 'great,' was originally applied to the majority group of the Socialist party. Similarly Soviet, from *so*, a prefix

with the force of the Lat. *cum*, and a Slavonic root meaning 'to speak,' means merely 'confabulation.' It is therefore impossible to give a scientific definition of Bolshevism, the more so as the Russian Soviet government under Lenin and Trotsky does not avowedly act in accordance with any preconceived theory; and consequently any description of Bolshevism from its inception in the summer of 1918 to the present date must of necessity be a deduction from the practices of its protagonists. Broadly speaking, however, it may be said, from the utterances of Lenin and his agents, that Bolshevism stands for government by those opposed to capitalism; and from Lenin's own publicly expressed views upon social and economic questions, the professed aim of Bolshevism is world-revolution, to be brought about by the dictatorship of the proletariat and a universal federation of Soviets controlled by the proletarian dictators in each country. To all territorial questions the Bolshevik answer is, 'Settlement by the principle of self-determination.' This formula was, however, passionately disputed in the Bolshevik party in the days when Lenin conducted his operations in Switzerland. His advocacy of the principle at the Zimmerwald conference is to be explained by the fact that one paramount object of the Bolsheviks is to destroy the existing state formations as a condition precedent to setting up their new Communist society. The accomplishment of this purpose would be facilitated by the cry of self-

determination, because, while most European and Amer. democracies acquiesce in the principle, they do so with the necessary reservations imposed by history, geography, and economics. The Bolshevik cry of wholesale self-determination would, therefore, have the result of making it appear that the Bolsheviks stood alone as the champions of minorities. It is not, however, in the views or utterances of its arch-protagonist that the strength of Bolshevism—however it may be defined—lies. The Bolsheviks in 1918 formed relatively only a small privileged class, but they were able to terrorize opponents by reason of their monopoly both of arms and of food supplies. The Bolshevik class consisted, and still consists, chiefly of workmen and soldiers, and included a large non-Russian element, such as Letts and Jews—the latter being specially numerous in the higher posts. Bolshevism has no tenets; its practices indeed are based rather on a series of negations. Since coming into power the Bolsheviks suppressed every newspaper, including the Socialist press, which was hostile to their rule. The right of holding public meetings, the right of free speech, and the right of trial, were alike suppressed, and all religious instruction was abolished in favour of a system of state-socialistic instruction. Property rights, if not avowedly abolished, were entirely subordinated to the power of the Bolsheviks to requisition anything and everything for state purposes. Nothing in the way of counter-revolution against these measures seems possible in

the light of the history of Bolshevik rule, for the Bolsheviks have established a system of force and oppression which would appear unequalled in the history of any known autocracy. See LENIN; RUSSIA (*History*); SOVIET; and TROTSKY.

**Bolsover**, urban dist., par., tn., Derbyshire, England ( $53^{\circ} 14' \text{ N.}$ ,  $1^{\circ} 18' \text{ W.}$ ); coal mines; magnesian limestone quarries supplied stone for Houses of Parliament. Pop. 11,200.

**Bolsward**, tn., Friesland, Netherlands ( $53^{\circ} 4' \text{ N.}$ ,  $5^{\circ} 32' \text{ E.}$ ); spinning mills; earthenware; cheese, butter; 17th cent. town hall. Pop. (comm.) 7,000.

**Bolt**, general term applied to any metal pin uniting parts of structures or machines, the commonest form having a head at one end and a screw thread, along which a loose nut works, at the other. Temporary bolts are appliances for fastening windows and doors.

**Bolt Head**, cape, S. Devonshire, England ( $50^{\circ} 13' \text{ N.}$ ,  $3^{\circ} 48' \text{ W.}$ ); alt. 420 ft.; has government wireless telegraphy station.

**Bolton**, munic., co., parl. bor., Lancashire, England ( $53^{\circ} 35' \text{ N.}$ ,  $2^{\circ} 26' \text{ W.}$ ); centre of cotton industry; manufactures muslins, paper, chemicals; iron foundries, sawmills; coal mines in neighbourhood; created parl. bor. (1832); returns two members; grammar school (founded 1641). Bolton was stormed by Royalists in Civil War. Pop. 180,900.

**Bolton Abbey**, eccles. par. and township, Yorkshire, England ( $53^{\circ} 59' \text{ N.}$ ,  $1^{\circ} 54' \text{ W.}$ ); remains of priory (12th cent.); nave used as par. church; beautiful

wooded hills. Acreage, 2,072; pop. 750.

**Bolzano**, BERNHARD (1781-1848), Austrian mathematician; was ordained to the priesthood and became prof. of philosophy at Prague; deprived of both offices on account of his democratic ideas. His chief work was *Wissenschaftslehre*.

**Boma**, seat of government, Belgian Congo, W. Africa (5° 46' s., 13° 6' E.); unhealthy; trading station since 16th cent.; formerly connected with slave trade; principal seapt. of country; rubber, palm oil, gold, cocoa, ivory. Pop. c. 5,000.

**Bomarsund**, tn., Aland Islands, Baltic Sea (60° 13' N., 20° 14' E.); fortified by Russia; captured and fortifications destroyed by British and French (1854).

**Bomb**, a hollow explosive projectile ignited by a time fuse set in action on discharge, or by a percussion fuse operating on impact. In modern war, bombs are thrown by hand, fired from a rifle, or dropped from aircraft. First used with effect by Japanese at Port Arthur (1904). Aircraft bombs were constantly employed in the Great War. There are two main classes: (1) high-explosive bombs, designed to damage works or personnel; and (2) bombs whose main object is the release of lethal or lachrymatory gas or of incendiary compounds, the former of which require a strong explosive to actuate them, and the latter only a light bursting charge.

**Bomb**, VOLCANIC, a spherical, discoidal, or pear-shaped mass of lava, originally ejected in molten condition from an active volcano.

These bombs may vary in diameter from a few inches to several feet.

**Bomba**. See FERDINAND II.

**Bombala**, tn., Wellesley, New South Wales (36° 54' s., 149° 16' E.), 250 m. s.w. of Sydney. Pop., tn. 1,000; dist. 4,500.

**Bombardier**, originally a gunner who could handle heavy artillery, formerly the lowest rank of non-commissioned officer in the Royal Artillery; bombardiers are now (1920) corporals.

**Bombardier Beetle**, beetle which when attacked ejects from anus an evil-smelling fluid.

**Bombardment** is the attack on a fortress, town, or military position, by throwing explosive bombs into it. The object may be to destroy military stores, demolish fortifications, shake the *moral* of troops holding a position, or, in case of a town, terrorize the inhabitants into surrender. The introduction of high-explosive shells and heavy howitzers has made this a highly effective method of attack. Aeroplanes and observation balloons have also made bombardment even more effective than hitherto, and in the Great War bombardments were carried out and ammunition expended on an unparalleled scale. It is probable that no town or fort of the old type could now hold out against determined and sustained bombardment. A new form of bombardment, known as barrage or curtain fire, developed during the Great War, by which a zone of ground was so shelled as to become practically impassable. This method was also used for the protection of advancing infantry.

**Bombardon**, or **BASS TUBA**, one of the saxhorns, a deep-toned musical instrument used in orchestras and military bands.

**Bombay**, the cap. of Bombay Presidency, and second port of India ( $18^{\circ} 55' \text{ N.}$ ,  $72^{\circ} 54' \text{ E.}$ ), situated in s. of isl. of same name, lying off coast of prov. and connected with mainland by bridges and causeways. In N. is native town; in s., European garrison; natives are of many different races; chief religions, Hinduism, Mohammedanism. Bombay has some fine buildings, including a univ., the Victoria railway terminus, Ragabai Tower, municipal offices, several colleges, and large hospitals; most important manufacturing town in India; favourably situated for foreign trade; has magnificent natural harbour, wet docks, and many dry docks; railway communication with all parts of India; centre of cotton trade; other industries are dyeing, tanning, metal work; imports and exports are practically those of presidency. The motto of the city is '*Primus in Indis.*' During the plague of 1896 every house had its victims, and nearly half a million of the survivors fled the city. It is extremely congested; seventy-six per cent. of the people live in one-roomed tenements. The Improvement Trust (est. 1900) does good work in reclaiming lands from the sea, opening out crowded localities, and constructing sanitary dwellings for the poor. Pop. 979,500.

*Bombay Furniture* is a distinct type of blackwood furniture which is chiefly manufactured in and near Bombay.

Edwardes, *The Rise of Bombay* (1902).

**Bombay Presidency**, governorship, Brit. India ( $13^{\circ} 53' - 28^{\circ} 29' \text{ N.}$ ,  $66^{\circ} 40' - 76^{\circ} 32' \text{ E.}$ ); bounded N. by Baluchistan and Punjab, E. by Rajputana, Central India Agencies, Berar, and Hyderabad, S. by Madras and Mysore, W. by Arabian Sea; coast-line towards N. broken by Gulfs of Cutch and Cambay; Narbada R., flowing to latter, divides prov. into two parts, of which northern consists of Gujarat and great plain of Sind, southern of coastal strip along Arabian Sea and part of Deccan tableland; chief mountains are W. Ghats, Satpura range, and outliers of Aravalli Hills; rivers, Indus (which traverses Sind), Narbada, Tapti.

Climate varies; high temp. in Sind plains; rainfall slight in N., moderate on tableland; heavy on coastal strip; wettest months, June to October; chief crops are wheat, cotton, millet, rice; other products are pulse, oilseed, sugar-cane, indigo, tobacco; principal industries, cotton manufacture, silk-weaving, carpets, leather goods, pottery, brasswork, wood-carving, cutlery, jewellery; minerals include gold, iron. Railway mileage, principal lines, c. 10,000 m. Administration carried out by governor, who is assisted by executive council of three members and legislative council of 48 members; the population includes Europeans, Mahrattas, and other races; majority are of Hindu religion, Mohammedanism coming next in numerical importance. Area (including feudatories and the dependency of Aden), 186,923 sq. m.; pop. 27,084,000.

*History.*—Between late 15th and early 17th cent. settlements were made in Bombay by Portuguese, Dutch, and English, of whom Portuguese first appeared. Bombay I. passed to England when Charles II. married Catherine of Braganza in 1661, and was subsequently granted to East India Company in 1668; other districts were added at various dates, and following successful wars against the Mahrattas, Governor Elphinstone (1819-27) organized the province; has frequently suffered from plague, cholera, and famine.

**Bombay Duck**, popular name for bummalo (*Harpodon nehereus*), a small transparent fish of family Scopelidae; highly appreciated as a relish.

**Bombazine**, a twilled or corded cloth, composed of silk and worsted; made in England from the time of Queen Elizabeth; Norwich the chief seat of manufacture from about 1816; it is also made in N. Italy.

**Bombetoka Bay**, inlet, N.W. Madagascar (15° 43' S., 46° 24' E.); fine anchorage.

**Bombinator**, or FIRE-TOAD, a frog-like animal common throughout central Europe and Asia; when alarmed it assumes upright attitude and displays underparts, which are coloured bright crimson, hence its name.

**Bombyx**. See SILK.

**Bon**, CAPE, headland, N. Africa (37° 4' N., 11° 3' E.); lighthouse; in ancient times known as promontory of Mercury.

**Bona**, or BÔNE, port, Algeria (36° 55' N., 7° 42' E.); Grand Mosque, quasi-Byzantine cath-

edral, and citadel (14th cent.); fine harbour; exports phosphates, sheep, barley, iron, copper, etc.; imports manufactured articles; occupied by French (1830, 1832). Pop. 42,000.

**Bona Dea** (class. myth.), Roman goddess of Faun group. Her rites were celebrated by women only. Her cult embraced sex mysteries or symbolism, and was connected with agriculture.

**Bona Fides** (Lat., 'good faith'), an equitable consideration which entered largely into Roman law and modern codes founded thereon; in Eng. law owes its existence to the infusion of equitable principles into the legal system. In the Court of Chancery *bona fides* is required from a party seeking equitable relief: 'he, who comes to equity must come with clean hands,' and 'he who seeks equity must do equity.' In the words of the Sale of Goods Act (1893), 'a thing is deemed to be done in good faith when it is in fact done honestly, whether it be done negligently or not.'

**Bonai**, formerly feudatory state of Chota Nagpur, Bengal, India (21° 54' N., 85° E.); attached to Orissa since 1905. Area, 1,349 sq. m.

**Bonald**, LOUIS GABRIEL AMBROISE, VICOMTE DE (1754-1840), Fr. philosopher and publicist, author of *Théorie du Pouvoir Politique et Religieux* (1796), destroyed by order of Directory, and many other works; was member of Fr. Academy (1816).

**Bonanza** (Span., 'prosperity'), colloquial expression in Amer. mining districts for discovery of a rich vein of ore. By analogy



the term expresses any sudden and unexpected good luck.

**Bonapartes**, or **BUONAPARTES** (Ital. form). The Bonaparte family consisted of: **CHARLES BONAPARTE** (1746-85), father of Napoleon I., descendant of Ital. family settled in Corsica; occupied position at court of Ajaccio; married (1764) Letizia Ramolina, a good *bourgeoise* to whom Napoleon was devotedly attached; as 'Madame Mère' in the Tuileries, she obstinately made economies against the evil days which she knew would come; she followed Napoleon to Elba, and died at Rome (1836). **NAPOLEON I.** (see special art.) was the second son (b. 1769); he had four brothers and three sisters, whom he treated with magnificent generosity. He once said: 'On dirait que j'aurais mangé l'héritage de notre père.' **JOSEPH** (1768-1844), eldest brother of Napoleon I., b. Corte, Corsica; became councillor of Ajaccio municipality; fled to France on victory of Paolist party. When Napoleon rose to power he was appointed commissary-general; was ambassador to Pope (1797); negotiated treaties of Lunéville (1801) and Amiens (1802); King of Naples (1806-8); King of Spain (1808-13). In Spain he endeavoured to thwart Napoleon, but was little more than nominal king, and retired from Madrid after his defeat at Vittoria (1813); he was lieutenant-general of France (1814); after final fall of Napoleon went to U.S., but returned to Florence (1832). **LUCIEN** (1775-1840), Prince of Canino; Napoleon's ablest brother; espoused democratic move-

ment (1789); subsequently president of Council of Five Hundred and minister of interior (1799); ambassador to Madrid (1800); estranged from Napoleon (1803); lived for some years in Italy; offered Napoleon his help during the Hundred Days; died at Rome. His eldest son, **CHARLES LUCIEN JULES LAURENT**, went to America, and is famous for his *Amer. Ornithology*; his younger son, **LOUIS LUCIEN** (1813-91), was an authority on Basque and Celtic languages. **LOUIS** (1778-1846), favourite brother of Napoleon, and educated by him, at the cost of much privation, from his lieutenant's pay; accompanied Napoleon during Ital. campaign (1796-7); became general (1804); governor of Paris (1805); married Hortense de Beauharnais, daughter of Josephine; King of Holland (1806-10); but so exacting were Napoleon's methods with vassal sovereigns that he abdicated in favour of his son, whereupon Napoleon declared Holland an integral part of empire (1810); Louis spent rest of his life in retirement at Rome. For his son, see **NAPOLEON III.** **JEROME** (1784-1860), King of Westphalia (1807-13); took part in Russian campaign (1812); commanded a division at Waterloo; subsequently a marshal of France and president of senate. **ELISA** (1777-1820), married Felix Baciocchi, a well-connected Corsican (1797); made Grand-duchess of Tuscany and Princess of Lucca and Piombino by Napoleon. **PAULINE** (1780-1825), Princess Borghese (1803), Napoleon's second and most beautiful sister; Duchess of Guastalla (1808-13).

CAROLINE (1782-1839), married Joachim Murat, King of Naples (1808-13), and devoted herself to furthering his interests.

All the above had issue, many of whom achieved distinction. The Bonapartes of Baltimore are descended from Jerome Bonaparte by his marriage with Elizabeth Patterson (1803).

The representative of the family aspirations is now VICTOR NAPOLEON BONAPARTE, grandson of Jerome Bonaparte. See also NAPOLEON.

Lévy, *Napoléon Intime*; Masson, *Napoléon et sa Famille* (Paris, 1897-1900); Atteridge, *Napoleon's Brothers* (1909); Bingham, *Marriages of the Bonapartes* (1881).

**Bonar**, HORATIUS (1808-89), Scot. divine and hymn writer, minister of the Chalmers Memorial Free Church, Edinburgh; moderator of Assembly (1869); wrote many religious works, including *God's Way of Peace and Hymns of Faith and Hope*. His best-known hymns are, 'I heard the Voice of Jesus say,' 'Thy way, not mine, O Lord,' and 'A few more years shall roll.'

**Bonasa Grouse** (*Bonasa umbellus*), N. Amer. grouse, recognized by absence of feathers from toes and lower leg, and by black neck-ruffs.

**Bonaventura**, St. (1221-74), Ital. Franciscan theologian; was educated at Paris; general of Franciscan Order (1256); called 'The Seraphic Doctor'; canonized (1482). A mystical theologian, he opposed the Aristotelianism of Roger Bacon and St. Thomas Aquinas, and showed platonizing tendencies; a profound philosopher and theologian.

**Bonavista**, seapt., Newfoundland (48° 40' N., 53° 10' W.); inhabitants engaged in fishing and navigation; one of oldest settlements in island. Pop 3,500.

**Bonchamp**, CHARLES MELCHIOR ARTUS, MARQUIS DE (1760-93), became leader of Vendéan insurgents (1793), and was killed at battle of Cholet. It is said that his last act was to insist on pardon and release of 4,000 republicans who had fallen into hands of the Vendéans.

**Bond**. (1) In Eng. law, is a document under seal in which the grantor, or *obligor*, acknowledges himself to be indebted in a certain sum to the grantee or *obligee*. On the sum being paid, with interest at a specified rate, the bond becomes void. Bonds are also given as security for the discharge of certain duties, the performance of such duties cancelling the bonds. (2) Term used in bricklaying and masonry to indicate arrangement of the bricks and the stones.

**Bond**, SIR EDWARD AUGUSTUS (1815-98), Eng. librarian; entered Brit. Museum (1838); appointed chief librarian (1878); ed. a series of Anglo-Saxon charters; with Maunde Thompson founded Palaeographical Soc.; K.C.B. (1898).

**Bond**, SIR ROBERT (1857- ), premier of Newfoundland, assisted in negotiating a reciprocity treaty with the U.S. and brought about the Bond-Blaine convention. He is a Devonshire man, and has been a delegate to this country on the French treaties.

**Bond**, WILLIAM CRANCH (1789-1859), Amer. astronomer; introduced astronomical photography (1848); discovered eighth

satellite of Saturn (1848), and invented an astronomical chronograph (1850).

**Bonde, GUSTAF, COUNT** (1620-67), Swed. statesman; became lord high treasurer (1659), and member of council of regency during minority of Charles XI.; favoured pacific and economic policy in national affairs, but was overborne by colleagues.

**Bonded Warehouse**, a government store or custom-house store where imported goods are lodged, pending re-exportation or until the duties chargeable thereon are paid on removal. The system of bonded warehouses (proposed in Walpole's Excise Scheme, 1733) was not adopted till 1803.

**Bondeno**, tn., Italy (44° 53' N., 11° 25' E.); hemp and rice cultivation. Pop. (comm.) 16,000.

**Bondi, CLEMENTE** (1742-1821), Ital. Jesuit, poet, and prof.; chief work, the poem *La giornata villereccia*, which in style resembles that of Lamartine.

**Bondu**, Fr. protectorate, W. Africa (13° 30' N., 13° W.) cotton, tobacco, fruit, indigo; gold, iron; came under Fr. rule (1858); Mungo Park was first European discoverer (1795).

**Bonduku**, tn., Fr. Ivory Coast, W. Africa (8° 1' N., 2° 53' W.); walled; several mosques; trade in kola nuts. Pop. c. 3,000.

**Bondy**, comm., Seine, France (48° 53' N., 2° 30' E.); environs of Paris; brewing; chemical manufactures. Pop. 7,500.

**Bône**. See BONA.

**Bone** is the hard substance of which the skeleton of the body is built up, serving as a framework for the body and for the protection of vital parts, and is

a connective tissue in which earthy salts have been deposited in order to strengthen the structure. Bones are classed as *long* (e.g., in thigh), *flat* (e.g., in skull), and *cutical* or *irregular* (e.g., in wrist). The animal or organic matter amounts in bone to about one-third of the whole, and the earthy or organic matter, in the form of salts, to about two-thirds. According as it is dense and hard in structure, or light and spongy, bone is called *compact* or *cancellous*. On microscopic examination bone is found to be formed by innumerable little canals, running longitudinally in a long bone, each containing blood vessels, and their walls formed by a series of rings of bony substance. Filling the spaces in bone is marrow, composed of fat cells, and of the same corpuscular elements as are found in the blood, but in a less advanced stage of development; there are two kinds of *marrow*, yellow and red, the former being found in the interior of long bones (e.g., the thigh bone), and the latter in smaller long bones (e.g., the ribs), and in short bones (e.g., vertebrae). Yellow marrow has a much greater number of fat cells, hence its colour, while red marrow is almost entirely composed of the other cellular elements, from which the blood corpuscles are formed. Bone is formed from cartilage or from membrane, usually the former, little points of bony cells developing and the area spreading.

*Inflammation* may affect the covering of the bone or *periosteum*, the bone itself, or the substance in the canal within, or *medulla*.

It may be acute or chronic, the acute form usually being due to injury followed by bacterial infection, and the chronic to the continued suppuration of acute form, to syphilis, and to tuberculosis. The former is usually treated by rest and fomentations, operation being sometimes necessary, and the latter by general treatment of the disease affecting the individual.

*Fractures* are treated by rest in splints, and massage, begun early.

*Rickets* is a general disease of children, with special manifestations in the bones.

**Bone**, HENRY (1755–1834), Eng. enamel-painter; private and historical portraits and class. subjects; royal enamel-painter (1801); R.A. (1811).

**Bone**, MUIRHEAD (1876– ), Scot. etcher and painter, has come to front since 1901 as master of dry-point. During Great War he was sent by War Office to make drawings and sketches on Western front.

**Bone**, WILLIAM ARTHUR (1871– ), Eng. chemist, inventor of the Bonecourt system of surface combustion and of processes for improving the calorific values of brown coals and lignites.

**Bone Ash**, or **BONE EARTH**, the residue after heating bones in presence of air till they are white; consists chiefly of phosphate and carbonate of lime; used for cupels, in making phosphoric acid and phosphorus, and as basis of fertilizers.

**Bone-bed**, geological term applied to deposits containing abundance of fossil bones and teeth; found in Silurian of Shropshire, and in micaceous sandstones of

Rhaetic, near Bristol; also found in caves associated with stalagmitic breccias.

**Bone-black**, or **ANIMAL CHARCOAL**, substance obtained by heating bones with limited access of air; contains about 10 per cent. of carbon along with calcium phosphate and other inorganic matter; used as decolorizer in sugar refining.

**Bone Fertilizers**, valued for phosphoric acid and nitrogen. When well cleaned, bones contain 25 per cent. of phosphoric acid and 5 per cent. of nitrogen; when burned the residue contains 30 to 35 per cent. of phosphoric acid but no nitrogen. For fertilizers, bones are usually boiled or steamed; in this way 30 per cent. of phosphoric acid and  $1\frac{1}{2}$  to 2 per cent. of nitrogen are retained. Bones give best results on slow-growing crops.

**Bone Oil**, **ANIMAL OIL**, **DIPPEL'S OIL**, or **OIL OF HARTSHORN**, dark brown, evil-smelling liquid containing ammonia, sulphuretted hydrogen, besides organic bases, obtained by condensing volatile products formed during heating of bones in iron cylinders; used chiefly in making lamp-black.

**Boner**, CHARLES (1815–70), Eng. poet and traveller, spent twenty years in Germany as tutor to the family of the Prince of Thurn and Taxis, where he wrote most of his poems, including *Verses* (1858), and *Forest Creatures*. He was a friend of Wordsworth, Charles Darwin, and Miss Mitford.

**Boner**, ULRICH (14th cent.), Swiss fabulist. Compiled oldest book of fables in German, his *Edelstein*, to serve as a 'talisman'

against evils and errors of the world. Modernized selections by Pannier (1895); ed. by G. F. Benecke (1816).

**Bo'ness**, or **BORROWSTOUNNESS**, seapt., Firth of Forth, Scotland (56° 1' N., 3° 36' W.); extensive harbour; large shipping trade; coal, iron, bricks, pottery; imports pit wood. Port closed during Great War. Pop. 10,900.

**Bonfire** is considered to be a corruption of *bone-fire*, originating in funeral pyre, the probable object of which was to scare evil spirits; the burning of effigies in such fires may be a relic of propitiatory sacrifice. In olden times, bonfires were used as beacons or warnings, for signalling the approach of enemies, etc.; at the present day they are lighted on occasions of national or public rejoicing.

**Bonga**, cap. of Kaffa, Abyssinia (7° 16' N., 36° 21' E.); trading centre for Galla countries.

**Bongardia**, genus of one species (*B. rauwolfii*) of barberry family, native in Greece and Central Asia; leaves are eaten by Persians like sorrel.

**Bon Gaultier Ballads**, parodies of modern poetry by Prof. W. E. Aytoun and Sir Theodore Martin; originally appeared in *Blackwood's Magazine* (1841-4).

**Bonghi**, RUGGERO (1826-95), Ital. scholar, political writer, and statesman; as minister for education (1874-6) introduced useful reforms; celebrated for his vivacious but acrimonious wit; works include *Storia dell' Europa durante la Rivoluzione Francese* (1890-4), and various biographies.

**Bongo**, negro people of Nilotic stock in the Sudan; of medium

height, black-haired, with a reddish brown complexion; peaceable and industrious agriculturists.

**Bonham**, tn., Texas, U.S. (33° 34' N., 96° 6' W.); cotton and cotton-seed mills. Pop. 4,800.

**Bonham-Carter**, HELEN VIOLET, LADY (1887- ), eldest daughter of Rt. Hon. H. H. Asquith, married (1915) Sir Maurice Bonham-Carter, K.C.B., then private secretary to her father, assistant-secretary, Ministry of Reconstruction (1918). She helped her father in his election campaign at Paisley by a series of vivacious and pointed speeches (1920), and received offers from many constituencies to stand as the Liberal candidate at the next general election.

**Bonheur**, ROSA (1822-99), Fr. artist; famous for her masterly painting of animals. Her first picture exhibited at the Salon when eighteen; famous *Attelage Nivernais* (1848) now in the Luxembourg; *Horse Fair* (1853) in New York, a replica being in National Gallery. Painted much in Scotland and Spain.

**Bonhill**, tn. and par., Dumbartonshire, Scotland (55° 59' N., 4° 33' W.); calico printing, bleaching, and dye works. Pop. (par.) 15,900.

**Boni**, native state, Celebes, Dutch E. Indies (4° S., 120° E.); inhabitants are Bugis; rice, tobacco; piracy and slave-raiding suppressed by Dutch (1908). Area, 2,600 sq. m.; pop. c. 200,000.

**Boni**, GIACOMO (1859- ), Ital. archaeologist, director of excavations in the Roman Forum and on the Palatine, where his work has won him European renown. Among his books are

*Ædes Vestæ* and *The Tower of St. Mark, Venice*.

**Boniface**, ST. (680-754), the 'Apostle of Germany'; of Eng. birth; began missionary labours in Frisia (718), where tribes were still heathen; founded famous monastery of Fulda; destroyed Thor's oak at Geismar and idol Stufio on Harz; organized eccles. system of Germany; became archbishop of all Germany (746); resigned (754) to return to earliest ideal, evangelization of Frisians; he and converts massacred by heathen within few months.

**Boniface V.**, POPE (619-25), interested himself in the conversion of England; he established the right of asylum in churches. **BONIFACE VIII.** (elected Pope, 1294) determined to be temporal as well as spiritual head of Christendom; his famous bull, *Clericis laicos*, was issued when Charles the Fair taxed ecclesiastics. He intervened when Edward I. was at war with Scotland.

**Bonifacio**. (1) Seapt., Corsica (41° 23' N., 9° 10' E.), on peninsula, Strait of Bonifacio; olive oil; coasting trade. Pop. 3,000. (2) STRAIT OF, narrow, rocky, and difficult channel, some 7 m. wide, between Corsica and Sardinia.

**Bonin Islands** (27° 45' N., 142° E.), chain of twenty small volcanic islands, N. Pacific, belonging to Japan; cap. Port Lloyd, on Peel I., the largest of the chain; discovered by Japanese (1593). Turtles caught in large numbers. Pop. 4,500.

**Bonington**, RICHARD PARKES (1801-28), Eng. artist, thirty-four of whose works are in the Wallace Collection, and one in

the National Gallery. His art, influenced by Constable, is famous for its brilliancy of colouring.

**Bonito**, name given to several species of pelagic fishes, of mackerel family, none of which have high value as food. *Thynnus pelamys*, allied to the tunny, is found abundantly in temperate and tropical seas; active and predaceous; lives chiefly on flying fish.

**Bonivard**, FRANÇOIS (1493-1570), Cluniac prior of Geneva, hero of Byron's *Prisoner of Chillon*, being imprisoned there for six years by order of Charles III. of Savoy; released when Chillon fell into hands of Bernese (1536); took refuge at Geneva, accepted the Reformation, and wrote *Chroniques de Genève*, an unscholarly production which was not printed until 1831.

**Bonn**, tn., on Rhine, Prussia (50° 44' N., 7° 4' E.); minster is Romanesque church, dating from 11th cent.; famous univ. on site of former electoral palace, with five faculties, established 1808; antiquarian museum and library; fine bridge across Rhine; behind town is Kreuzberg, with monastic church; Beethoven's birthplace; occupied by Allies after Armistice (1918). Pop. 88,000.

**Bonnard**, ABEL (1883- ), Fr. poet, the first recipient of the Prix National de Poésie (1906), conferred on him for the poem *Les Familiers*. He wrote also *Les Royautés*.

**Bonnat**, LÉON JOSEPH FLOR-ENTIN (1833- ), Fr. painter, educated in Spain, a pupil of Madrazo. Among his sitters were Victor Hugo, Thiers, Pasteur, Dumas, Renan, and Carnot.

**Bonneau**, LOUIS (1851- ), Fr. soldier; fought in Franco-Prussian War, and at outbreak of Great War commanded 7th Army Corps at Besançon.

**Bonner**, EDMUND (?1500-69), Bishop of London; was Wolsey's chaplain, and was chosen to advocate Henry VIII.'s cause before the Pope in the matter of the royal divorce. He was deprived of his see under Edward VI., but restored by Mary. Refusing to take the oath of supremacy under Elizabeth, he was deprived and imprisoned.

**Bonnet**. (1) A soft cap for masculine wear, differing in shape from the hat by its absence of brim; three types in Scotland—the Lowland broad bonnet, the balmoral, the glengarry; the latter two used as headgear for Highland and Lowland Scottish regiments. (2) For women, the bonnet has no brim and covers no part of the forehead; worn mostly by elderly women.

**Bonneval**, CLAUDE ALEXANDRE, COMTE DE (1675-1747), Fr. renegade and adventurer; served under Prince Eugène; later joined Turk. service, under title of Achmed Pasha; was sultan's chief of artillery.

**Bonneville**, BENJAMIN (1795-1878), Amer. soldier and explorer; explored the Rocky Mts. (1831-36); an account of his adventures was edited by Washington Irving. He subsequently served in the Mexican and Civil Wars.

**Bonney**, THOMAS GEORGE (1833- ), Eng. geologist, clergyman, emeritus prof. of geol. at Univ. College, London. His best-known works include *The Story of Our Planet*, *Volcanoes*,

and *The Present Relations of Science and Religion*.

**Bonnivet**, GUILLAUME GOUTIER, SEIGNEUR DE (1488-1525), Fr. courtier and soldier; was favourite of Francis I., who made him admiral of France (1515); commanded the army of Navarre (1521); served in Italy (1523-5), and was killed at Pavia. Famed for his wit, handsome person, and licentious life.

**Bonny**. (1) Port, Nigeria (4° 25' N., 7° 12' E.); exports palm oil. Pop. c. 7,000. (2) Riv. on which above is situated; falls into Bight of Biafra; one of most easterly tributaries of the river Niger.

**Bonomi**, JOSEPH (1739-1808), Eng. architect, of Ital. parentage; he built the R.C. chapel, Spanish Place, London; also Dale Park, Sussex, and other erections in the Grecian style.

**Bonomi**, JOSEPH, the younger (1796-1878), son of the above; practised as a sculptor; best known for his illustrations of Egyptian subjects; wrote a work on Nineveh.

**Bononia**, the modern BOLOGNA.

**Bonpland**, AIMÉ JACQUES (1773-1858), Fr. botanist, director of Empress Josephine's gardens, Malmaison. While on a scientific tour to Paraguay he was imprisoned, and there studied bot. of the country. His works include *Plantes Equinoxiales*.

**Bonsignori**, FRANCESCO (1455-1519), Ital. painter of the Veronese school, known as 'the modern Zeuxis' from lifelikeness of his work; his works are to be seen in the Pitti Gallery, the Uffizi, and the National Gallery, London.

**Bonstetten**, KARL VICTOR VON (1745-1832), Swiss author; held

advanced liberal opinions which sometimes involved him in difficulties with the authorities, but won for him the regard of many distinguished people, including the Eng. poet Gray, and Mme. de Staël. His best-known work is *L'Homme du Midi et l'Homme du Nord* (1824).

**Bonus**, an additional payment made to a shareholder, insured person, or employee, over and above what is regularly due or legally claimable. During Great War railway and other companies granted 'war bonuses' to the employees to afford relief in times of hardship; as a reward for special services; as an inducement to remain in the same employment; as a gift out of exceptional profits earned.

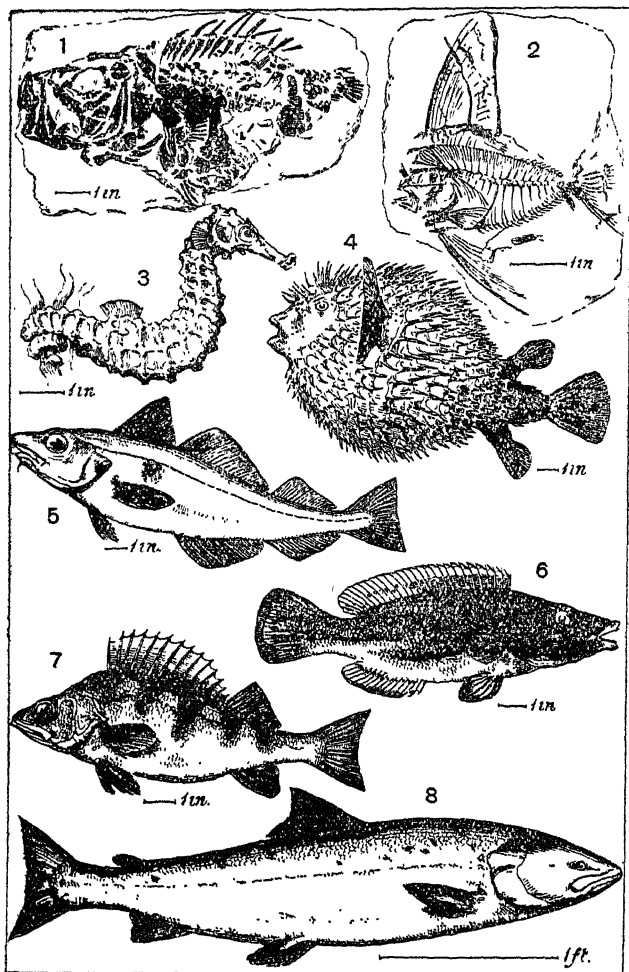
**Bony Fishes** (TELEOSTEI). By far the greater number of existing fishes are grouped together in this order, containing about 10,000 species, including such diverse forms as salmon, herrings, eels, pike, cod, sea-horses, and globe-fishes. The most apparent character which unites the infinite variety of Teleosts is the presence of a skeleton of true bone, as the scientific name indicates. There are many other less evident but as distinctive characters; the tail is altogether formed of what is, in more primitive fishes, only the ventral lobe, which here assumes a false appearance of symmetry (homocercal). The heart has a non-contractile arterial bulb, the optic nerves cross, but do not interlace (decussate), there is no spiral valve in the intestine, and the air-bladder, except in very rare cases, has ceased to be used in

respiration. For the most part bony fishes are protected by thin, overlapping scales, but in some there are bony plates, and in some the skin is naked. Teleosts are amongst the most modern of fishes, but herring-like examples have been found in rocks of Jurassic Age.

**Book** (A.S. *bōc*; Ger. *buch*), the name formerly applied to any written tablet or document; now used to describe a printed literary work, stitched and bound; also the division of such a work, as 'Book II.' of *Paradise Lost*. A modern printed book is described according to the size of its pages, which size is governed by the number of times a single sheet of printing-paper (*folio*) is folded. Thus a *folio* book consists of sheets folded once, forming two leaves, or four pages; in a *quarto* the sheet is folded twice (four leaves, eight pages); in *octavo* it is folded three times (eight leaves, sixteen pages), and so on down to smaller sizes. The most common size to-day is *crown octavo* (cr. 8vo), which is the size of the usual popular novel, and many other books; while a favourite smaller size is that known as *foolscap octavo* (fcp. 8vo), which is often used for books of verse, and with uncut leaves of *deckle-edged* (untrimmed) paper.

The right-hand page of a printed book is called the *recto*, the left-hand page the *verso*. The first page usually contains the title, or, if it is a long and elaborate one, a portion only, and is known as the *half-title page*. The back of it is usually left blank. Then follows the *title-page* proper,





### Bony Fishes.

1. *Hoplopteryx lewesiensis* (fossil). 2. *Semiophorus velifer* (fossil). 3. Sea-horse. 4. Globe-fish.  
5. Haddock. 6. Cook wrasse. 7. Perch. 8. Salmon.

bearing the year of publication, though there is a growing tendency at present to print the date on the back of the title-page, as thus: 'First printed in 1920,' the dates of successive eds. being added as they occur. The title-page is followed in proper order by the dedication, preface, and contents pages. In early printed books the name of the printer and the date and place of publication were inscribed at the end of the book; this appendix (containing sometimes a note as to the nature of the book) was called the *colophon*. In early printed books the leaves were not numbered, the pioneer in leaf numeration being a Cologne printer who first made use of it about the year 1470, while pagination was a product of the 16th cent.

Duff, *Early Printed Books* (1893); Jacobi, *Some Notes on Books and Printing* (1902).

**Bookbinding**, the art of making up a book by fastening together the sheets and providing them with an outer cover to protect them. Before the invention of printing, manuscript books were both written and bound by monks, but when printing presses became established towards end of 15th cent., bookbinding became a separate art in which Italy took the lead. In 17th cent. Fr. binding became prominent, and during early 19th cent. Eng. binding reached a high position, which it still maintains. Books are bound in either leather or cloth, the latter being less strong, but cheaper. The binder folds the sheets which come from the printer into two, four, or eight

leaves according as the book is folio, quarto, or octavo, and arranges these in the proper order as indicated by letters, called signatures, printed at the bottom of the first page of each sheet. The sheets are then pressed and saw-cuts made across the back to take the cords with which they are stitched. The back is then hammered and pressed to round it and to form side projections, called joints, to hold the case. In cloth binding the case, consisting of two pieces of millboard joined by a strip of paper to form the back, is then attached. The requirements of modern publishing have made cheaper and speedier methods necessary, and practically every operation is now performed by machinery. Folding the sheets into signatures is either done by the printing machine itself, or by a special folding machine; elaborate devices 'gather' the signatures, which are stitched by sewing machines; guillotines trim the three edges by one operation; glueing and rounding the back, and putting on the case or cover, are performed by more or less automatic methods. The 'cases' are now made in large binderies by machines, and are 'blocked' by ornamental stamps or gold lettering previous to the final operation of pasting the end pages to the inside of the case. This operation is done almost automatically. After pressure in a hydraulic press, the book is ready for delivery.

**Book Clubs.** (1) Early form of circulating library, revived in *The Times Book Club*, formed in

1905. (2) Learned Scot. societies, such as Bannatyne, Maitland, and Roxburghe Clubs, have been founded to print literary and historical texts.

**Book-collecting.** The habit of collecting rare books came into fashion in England after the time of Henry VIII. There were a few notable collectors during the reign of Elizabeth. A bookseller named George Thomason, who died in the early years of Charles II.'s reign, made a collection of Civil War pamphlets, which have proved invaluable to historians. By this time collecting had become pretty general throughout Europe, and public sales of rare books became common in England during the last quarter of the 17th cent. Most of these early collectors bequeathed their treasures to univ. or public libraries. Sir Thomas Bodley founded the famous Oxford library which is named after him; the Brit. Museum was founded in 1753 to house the collection formed by Sir Hans Sloane and other valuable literary treasures, which was further enriched by George II., who transferred to its keeping the valuable collection of books made by preceding sovereigns. George III. brought together an immense independent collection of books and mss., and these in turn eventually passed to the Brit. Museum.

The gifts of books to the universities of Oxford and Cambridge during the past three centuries are too numerous to mention. A very famous collection of modern times was that made by the Earls Spencer, known

as the Althorp Library, which collection having been purchased by Mrs. Rylands, formed the nucleus of the magnificent 'John Rylands Library' in Manchester. Lord Acton's vast library was purchased by Andrew Carnegie and presented to Lord Morley, who handed it over to Cambridge Univ. It is not, however, only the wealthy that find pleasure in book-collecting. The book-lover of limited means may take an exquisite pleasure in the pursuit of literary treasures, and, since rare books usually increase in value, the collector will probably find that his money is well invested. Buyers may derive much useful information from *Book Prices Current*, which is pub. annually.

**Book-keeping** is the art of recording business transactions in a systematic manner, so that a trader can see at a glance in what position a debtor stands to him financially, or in what position he himself stands to his creditors. The system now in use was derived from the Venetian traders of the 15th cent., though doubtless many small improvements have been made during the course of five centuries. The system is either by single or double entry, and in large trading concerns many different kinds of books are employed.

*Double Entry* is the name given to the standard method; single entry is incomplete and unsystematic. The essential book is the *Ledger*, in which all transactions are classified. For convenience the *Ledger* is usually split up into separate books—*Private Ledger*, *Sales Ledger*,

*Town Ledger*, etc.; and to relieve it of details subsidiary books are employed in which transactions are entered chronologically—e.g., *Sales Day Book*, *Purchases Day Book*, *Cash Book*. In modern practice the use of the *Journal* is restricted to such entries as cannot

be auxiliary to the books of account. However differing in detail, the essential of all book-keeping is that an exact and full knowledge of the financial position should be readily available at any time. A personal Ledger account is made out in this form—

## HENRY JOHNSON.

| Dr.                     |          | £          | s.        | d.       |
|-------------------------|----------|------------|-----------|----------|
| 1920.                   |          |            |           |          |
| June 9.                 | To goods | 21         | 0         | 0        |
| Aug. 20.                | „        | 10         | 5         | 0        |
| Sept. 1.                | „        | 5          | 9         | 0        |
|                         |          | <u>£36</u> | <u>14</u> | <u>0</u> |
| Balance brought forward |          | £5         | 9         | 0        |

| Cr.             |  | £          | s.        | d.       |
|-----------------|--|------------|-----------|----------|
| 1920.           |  |            |           |          |
| Sept. 1.        |  | 29         | 13        | 9        |
| By cheque       |  | 1          | 11        | 3        |
| „ discount      |  |            | 31        | 5        |
| „ balance owing |  |            | 5         | 9        |
|                 |  | <u>£36</u> | <u>14</u> | <u>0</u> |

conveniently be made elsewhere. The principles of book-keeping are uniform, but the form may be varied infinitely to meet the exigencies of any particular business—e.g., the *Tabular Method* in hotel book-keeping; while in certain cases, such as *Joint-Stock Companies* and *Life Assurance Companies*, specific forms of account are compulsory by Act of Parliament. Generally, certain statistical books are required, of which *Stock Books* and a company's *Register of Members* are examples. These

are auxiliary to the books of account. By this statement it will be seen that the two earlier items have been paid, less 5 per cent. discount, leaving the final item still unpaid.

The *Balance Sheet* is a complete statement of the financial position at a given date, and is usually prepared annually somewhat after the style below.

Fieldhouse, *The Student's Complete Commercial Book-keeping*; Cropper, *Book-keeping and Accounts*; Thornton's *Manual of Book-keeping*; Heap's *Antiquity of Book-keeping*, etc.

## BALANCE SHEET OF JONES &amp; Co., December 31, 1920.

| LIABILITIES.  |               | £        | s.       | d. |
|---------------|---------------|----------|----------|----|
| Amount due to |               |          |          |    |
| creditors     | 1,550         | 0        | 0        |    |
| Bills payable | 450           | 0        | 0        |    |
| Capital       | 1,000         | 0        | 0        |    |
|               | <u>£3,000</u> | <u>0</u> | <u>0</u> |    |

| ASSETS.       |               | £        | s.       | d. |
|---------------|---------------|----------|----------|----|
| Accounts due  | 1,000         | 0        | 0        |    |
| Stock in hand | 500           | 0        | 0        |    |
| Cash          | 200           | 0        | 0        |    |
| „ in bank     | 1,200         | 0        | 0        |    |
| Machinery     | 80            | 0        | 0        |    |
| Furniture     | 20            | 0        | 0        |    |
|               | <u>£3,000</u> | <u>0</u> | <u>0</u> |    |

**Book-lice**, **DUST-LICE**, or **DEATH-WATCHES** (Psocidæ), a separate order of insects (till recently included in Neuroptera); with small soft bodies, and with or without wings. Two genera, *Clothilla* and *Atropos*, to be seen running actively in quiet apartments, eat the starch paste in bookbindings and are said to cause the nocturnal ticking which is alleged to portend death. A beetle, *Anobium*, produces a somewhat similar noise.

**Book of Common Prayer.** See **PRAYER, BOOK OF COMMON.**

**Book-plates**, name given to labels placed inside cover of books to denote ownership; used since 15th cent.; before their introduction covers of books were stamped with owner's personal device. They are also known as *ex libris*. The earliest known are of Ger. origin, but an O.E. book-plate appears in an ancient folio of Henry VIII's library, bearing an elaborate emblematic drawing. Many different designs have been utilized, but the majority are armorial. Many of the best-known artists have designed book-plates, including Dürer, Hogarth, Marshall, and Bewick. Book-plates are now little used, but are in demand by collectors.

**Book-scorpions** (Pseudo-scorpionidæ, an order of Arachnids), minute, scorpion-like creatures found in warm regions lurking within books or in dark confined places. They feed upon the juices of insects.

**Bookselling.** The issue of a book to the public at the present day is usually the work of four separate producers — the pub-

lisher, the printer, the binder, and the bookseller, though the publisher, as in the case of firms publishing popular works or school books, may also be the printer and binder. Publishing as a distinct trade is of comparatively modern growth. During the 17th and 18th centuries, in England, the word publisher was unknown. If a literary work was to be issued, it was printed by the bookseller on his own premises, and retailed to the public by himself and his assistants. Thus we read of Dr. Johnson, Dryden, Goldsmith, and other famous authors 'writing for the booksellers,' and usually making very bad bargains. Some of the more famous of these early booksellers may be mentioned. Thomas Guy (1644-1724), the founder of Guy's Hospital; Jacob Tonson (1656-1736), who pub. Dryden's works, and with whom the poet was constantly quarrelling; Lincott (1675-1736), who published Pope's *Homer*; Samuel Richardson (1689-1761), who was the king's printer, and wrote *Clarissa Harlowe* and other novels; and Joseph Cottle (1770-1853), of Bristol, who was associated with the early work of Wordsworth, Coleridge, and Southey. See **PUBLISHING.**

**Book-worm.** See under **POLY-MORPHA.**

**Boole, GEORGE** (1815-64), Eng. logician and mathematician; prof. of maths., Queen's Coll., Cork (1849); pub. treatise on *Differential Equations* (1859), and on *Calculus of Finite Differences* (1860); received medal of Royal Society (1844) for paper on *General Method of Analysis*. His

principal work as a logician was the *Laws of Thought* (1854).

**Boom**, a barrier of timbers or other suitable material lashed together and extended across the entrance to a harbour, river mouth, or sea channel to prevent the entrance of hostile ships. In the Great War such booms were usually fitted with steel nets, descending to a great depth, to guard against attack by submarines. The Grand Fleet based at Rosyth was protected by five booms stretched at various points from the entrance of the Firth of Forth to the Forth Bridge. In the latter stages of the Great War Scapa Flow was similarly defended.

**Boom**. See RIGGING.

**Boom**, tn., Antwerp, Belgium (51° 5' N., 4° 22' E.); brick-kilns; tanning. Pop. 17,200.

**Boomerang**, curved or angular hardwood weapon used by savage tribes in Australia and Africa, also by the Dravidians of India. It is used in warfare or to kill animals; one form is so constructed that after striking a small object it returns to the sender.

**Boomplaats**, battle-site, Fauresmith div., Orange Free State, S. Africa (29° 43' S., 25° 36' E.); Boers defeated by General Sir Harry Smith, Aug. 29, 1848.

**Boone**, city, Iowa, U.S. (42° 4' N., 93° 54' W.); coal and lumber exported. Pop. 10,350.

**Boone**, DANIEL (1734–1820), famous Amer. pioneer, one of the founders of Boonesboro, Kentucky; a well-known hunter, and expert in Indian matters.

**Boonton**, tn., New Jersey, U.S. (40° 54' N., 74° 26' W.); ironworks. Pop. 5,000.

**Boonville**. (1) City, Missouri, U.S. (39° N., 92° 45' W.); boots and shoes. Pop. 4,250. (2) Vil., New York, U.S. Pop. 4,100.

**Boorde** (or BORDE), ANDREW (c. 1490–1549), Eng. physician, traveller, and author; wrote, among other works, *The Fyrst Boke of the Introduction of Knowledge* (1547), an account of his European travels with geographical descriptions, and *Itinerary of Europe*, the first printed handbook of Europe.

**Boos**, MARTIN (1762–1825), Ger. Catholic divine who started emotional religious movement; persecuted for his pietism and imprisoned (1816), but in the following year became prof. of theol. at Düsseldorf. *Life* by C. Bridges (1836).

**Booster**, a form of dynamo for raising the voltage of an outgoing current to compensate for the drop in a long feeder.

**Boot**, covering for the foot. The ancient Greeks wore sandals, as did the Roman plebeians, but the Roman patricians wore leather boots. The early Britons probably wore sandals, and, in later times, boots made of skins. The boot first became prominent in England when a fashion was introduced, during the reign of Edward IV., of wearing boots with such ridiculously long points that they had to be supported by light chains depending from below the knee. In early Tudor times an ugly broad-toed boot was worn by men, as may be seen in pictures of the period. During the reigns of Charles I. and II. boots with bag-like open tops were the fashion. After these came the *Jack-boot*, the

*Hessian*, and the *Wellington boot*. Buckled ankle shoes were also commonly worn from the time of the early Stuarts. In Georgian days they were worn with high, red heels. One of the chief centres of the modern boot industry is Northampton. Until the advent of the Blake sole-sewing machine in the early 'sixties boots were 'made'—i.e., soles and heels were attached by hand labour. The Blake machine revolutionized the trade, and the Blake process rapidly became the popular method of manufacture for the cheaper grades. The more recent invention of welting machinery has again greatly modified the processes of manufacture, and now boots closely rivalling the hand-sewn boot are made by machinery.

**Boot**, Scottish instrument of torture applied to extract confessions from criminals; originated about middle of 16th cent.; one or both legs were encased in wooden (or metal) boot, and wedges successively driven down between case and leg; used on rebellious Covenanters in 1666; discontinued 1690.

**Bootan**. See BHUTAN.

**Boötes**, anc. northern constellation, mentioned by Homer in the *Odyssey*; easily identified by its principal star Arcturus or a Boötes. Miræ (ε Boötes) is a beautiful double star (orange and green).

**Booth**, BARTON (1681–1733), Eng. actor; educated Trinity Coll., Cambridge; played at the Haymarket and Drury Lane theatres; buried in Westminster Abbey. He achieved his greatest successes as Cato, Hotspur, Brutus, King Lear,

Othello, 'the gay Lothario,' and ghost in *Hamlet*. See *Lives* by Victor (1733) and Cibber (1753).

**Booth**, RT. HON. CHARLES (1840–1916), sociologist; a pioneer in statistical sociology; partner of shipping firm of Booth and Co.; wrote books on old age pensions, also an epoch-making work, *Life and Labour of the People in London* (16 vols. 1899–1903).

**Booth**, EDWIN THOMAS (1833–93), Amer. actor. He made his first appearance at Boston (1849). After years of struggle, by means of his striking personality, and the charm of his elocution, he became generally recognized as the greatest Shakespearean actor the Amer. stage has produced. In his later years he alternated the chief parts in *Othello* with Sir Henry Irving, at the Lyceum. Undertook short engagement with Salvini in New York (1886), and following year formed combination with Lawrence Barrett that lasted till Barrett's death (1891). Apart from the high quality of his acting, he was remarkable for his artistic taste and his lavish generosity.

**Booth**, JAMES CURTIS (1810–88), Amer. chemist, established at Philadelphia the first laboratory in the U.S. for instruction in analytical chemistry; was the first to introduce nickel as an alloy in the U.S. coinage.

**Booth**, JOHN WILKES (1839–65), Amer. actor, left the stage in 1863, and became a Secessionist plotter. He shot President Lincoln, April 14, 1865, and refusing to surrender, was himself shot.

**Booth**, WILLIAM, 'GENERAL' BOOTH (1829–1912), Eng. home missionary; resigned ministry

in Methodist New Connexion (1861) and in 1865 established the Christian Mission, out of which developed the Salvation Army, in the East End of London. Booth as 'General' was granted almost absolute power, and became one of most prominent individualities of Eng. life, as his Army has become feature of almost every Brit. town and village, besides spreading almost over the whole world; costume is navy blue serge uniform, blue cap for men, and blue straw for the familiar Salvation Army 'lasses.' The teaching is emotional Christianity, doctrinally broad; they earnestly fight 'the drink,' and are noted for their patience with apparently hopeless drunkards and jail-birds. Booth organized Rescue, Maternity, Prison-gate, and Children's Homes, Slum Posts, Shelters for Homeless, Food Depots, Labour Bureaux, and Farms at home and abroad. In this social work the Army has proved especially successful. He wrote *In Darkest England and the Way out* (1890).

Harold Begbie, *Life of General Booth* (2 vols. 1920).

**Booth, W. BRAMWELL** (1856–), eldest son of above; succeeded his father (1912) as general of Salvation Army; presided at International Congress in London (1914). A masterly organizer; is author of several religious pamphlets and books.

**Boothby, GUY NEWELL** (1867–1905), novelist; born in S. Australia; lived for many years in England, and there wrote his well-known sensational novels, including *The Beautiful White Devil*, *Dr. Nikola*, etc.

**Boothia Felix**, peninsula, N. America (70° N., 96° W.); discovered by Sir John Ross (1829–33); contains Magnetic Pole. The *Gulf of Boothia* separates the peninsula from Cockburn Land and Melville Peninsula.

**Bootle**, co. bor., Lancashire, England (53° 27' N., 3° W.); continuous with Liverpool; chemicals; jute; engineering works. Pop. 81,500.

**Booty**. See PRIZE.

**Bopp, FRANZ** (1791–1867), Ger. philologist; prof. of Sanskrit at Berlin (1821); author of a famous *Comparative Grammar*, in six parts (1833–52).

**Boppard**, tn., Rhineland, Prussia (50° 14' N., 7° 35' E.); fruit and wine. Pop. 6,400.

**Bora**, sharp, cold, dry N.E. wind, blowing in fierce bursts, with velocity reaching 130 m. per hour, off Carso and Illyrian Mts. to Adriatic Sea. Also known along N.E. coast of Black Sea.

**Bora, KATHARINA VON** (1499–1552), wife of Luther (1525); she escaped with eight other nuns from their convent; had six children; survived Luther for seven years.

**Bora-Bora**, or BOLABOLA, one of the Society Islands (16° 27' S., 151° 47' W.); 30 m. in circumference; discovered by Cook (1769).

**Boracic Acid**. See BORIC ACID.

**Boracite** ( $2\text{Mg}_3\text{B}_6\text{O}_{15} + \text{MgCl}_2$ ), mineral salt of magnesium borate and magnesium chloride; occurring in isometric tetrahedral crystals, transparent, vitreous, or adamantine, colourless, white, or yellowish green; has pyro-electrical properties; found in salt deposits at Stassfurt.

**Borage** (*Borago officinalis*), annual herb found in Europe and



Asia; common in waste places in Britain, but not indigenous; a typical 'bee-flower.'

**Boraginaceæ** are herbaceous plants; leaves alternate, hairy; flowers salver, wheel, or funnel-shaped, blue or purplish; mucilaginous, containing alkalis; roots often yield dyes. Borage (*Borago officinalis*), favourite ingredient in claret cup; *Anchusa* (alkanet) yields dye; *Symphytum* (comfrey); *Myosotis* (forget-me-not).

**Boras**, tn., Sweden (57° 43' N., 12° 57' E.); spinning and weaving. Pop. 21,500.

**Borax**, or SODIUM BORATE ( $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ ), forms about 55 per cent. of tincal, a mineral found on shores of salt lakes of Tibet and California; still made on commercial scale from sodium carbonate and boric acid, but more generally from colemanite (calcium borate); used in making porcelain and glass, as a starch glaze, and in preserving certain foods; also in soldering and welding for securing a clean metallic surface.

**Borax Lake**, a strongly alkaline lake, California, U.S. (39° N., 122° 30' W.); borax supply probably derived from hot springs.

**Borbeck**, comm., Rhineland, Prussia (51° 30' N., 6° 50' E.); coal, iron, zinc. Pop. 71,100.

**Borchgrevink**, CARSTEN EGERBERG (1864– ), Arctic explorer, native of Christiania; commanded Southern Cross expedition (1898); wrote *First on the Antarctic Continent*, etc.

**Borda**, JEAN CHARLES (1733–99), Fr. nautical astronomer; fought at battle of Hustenbeck; then entered navy, and made various scientific voyages. His

works include *Description et Usage du Cercle à Réflexion*.

**Bordeaux**, tn., Gironde, France (44° 50' N., 0° 35' W.); in midst of great wine, fruit, grain, and timber-producing country; trading centre; third seaport in France; exports wine, brandy, hides, wool, fish, fruits, sugar, coffee, oil, resins, cottons, machinery, etc. Archiepiscopal see; cathedral, fine churches; town hall, museums, theatre, library, hospital; courts of appeal and commerce; univ., various educational institutions; taken by Romans, afterwards held by Goths; passed to France and then to England with Eleanor of Aquitaine; French since 1453. During Great War, when the Germans were threatening Paris in 1914, Bordeaux became seat of Fr. Government for some time. Pop. 261,700.

**Bordeaux**, HENRY (1870– ), Fr. novelist, critic, and dramatist; member of Fr. Academy; a native of Savoy, and to his faithful portrayal of Savoyard life and scenery he owes his position as one of the most popular of contemporary Fr. novelists. The whole of his work may be aptly described by the title of his first novel, *Le Pays Natal*. During the Great War he served as a captain of Territorials; wrote the epic story of the Verdun forts Vaux and Douaumont in *Les Derniers Jours du Fort de Vaux* and *Les Captifs délivrés* (Eng. trans.), a life of the famous chevalier of the air in *Vie héroïque de Guynemer*, and pub. for benefit of his wounded comrades *La Jeunesse Nouvelle*, etc. Author of *Vies Intimes*, *La Vie au Théâtre*

(critical works); *L'Ecran brisé* and *Un Médecin de Campagne* (plays); and numerous novels, many of which have been translated into English—e.g., *La Peur de Vivre*, *Les Roquevillard*, *La Croisée des Chemins*, etc. His *La Vie au Théâtre, 1913-19*, was pub. in 1920.

**Borden, Sir Frederick William** (1847- ), Canadian official; a surgeon in government military service; entered Canadian House of Commons (1874); was appointed minister of militia (1896), and is a member of Imperial Council of Defence; represented Canada at Imperial Defence Conference (1909), and was elected vice-president of British Empire League.

**Borden, Rt. Hon. Sir Robert Laird** (1854- ), Canadian statesman, born at Grand Pré, Nova Scotia; admitted to Canadian bar (1878); elected member of the House of Commons for Halifax, Nova Scotia (1896); became leader of Conservative opposition on resignation of Sir Charles Tupper (1901); was defeated for Halifax (1904), but returned for Carleton, Ontario (1905), and Halifax (1908, 1911, 1917). He became premier (Oct. 1911) when Laurier government was defeated on the reciprocity question; brought forward bill (1913)—which was rejected by the senate—for Canadian contribution of three battleships to the British navy; at outbreak of the Great War he zealously supported imperial government, and was the first overseas minister to be summoned to a meeting of the British cabinet. In Oct. 1917 he formed a coalition cabinet, and after general elec-

tion in Dec. retained his premiership, and enforced conscription law. He represented Canada at the Paris Peace Conference (1919). Illness compelled him for a time to relinquish duties of his office. He holds Grand Cross of the French Legion of Honour, G.C.M.G., and has received freedom of London and of Edinburgh (1915).

**Bordentown, tn.**, New Jersey, U.S. (40° 9' N., 74° 41' W.); military institute. Pop. 4,200.

**Bordereau**, Fr. word for invoice, account, or memorandum, which came prominently before the public in Dreyfus case (1904).

**Border Regiment**, a combination of the old 34th Regiment (raised in 1702) and the old 55th (2nd Border Regiment), raised in 1755. The 34th took part in the capture of Vigo and Fort St. Sebastian in 1719. A second battalion (raised in 1805) was actively engaged in the Peninsula (1809-14), took part in the important battles, and at Arroyo dos Molinos captured a whole battalion of an enemy regiment. The 55th fought in the Amer. War of Independence, in the Fr. Revolutionary wars, the Kaffir War of 1842, the Crimean War, and the Indian Mutiny. Regimental battle honours up to eve of the Great War: Havana, St. Lucia (1778), Albuera, Arroyo dos Molinos, Vittoria, Pyrenees, Nivelle, Nive, Orthes, Peninsula, Alma, Inkerman, Sevastopol, Lucknow, Relief of Ladysmith, S. Africa (1899-1902).

In the Great War the Border Regiment numbered three regular and special reserve battalions (including the Cumberland Militia); two T.F. battalions (4th

and 5th); and four service battalions (6th, 7th, 9th, and 11th). In original B.E.F., 2nd Batt. was part of the 20th Infantry Brigade (7th Division).

1914.—2nd Batt. in Ypres salient took part in desperate fighting round Kruisick; on Zandvoorde-Wervicq road. This battalion held on from Oct. 22 to 29, and suffered terribly.

1915.—1st Batt. (29th Div.) in landing at Cap Helles; 6th Batt. took part in landing at Suvla Bay (Aug. 7) and in fine attack on Yilghin Burnu; showed great bravery at Scimitar Hill, etc. 1st Batt. landed Suvla Bay (Aug. 25), and took part in series of attacks from Chocolate Hill; also in attack on Scimitar Hill, which troops engaged nearly succeeded in taking.

1916.—11th Batt. in battle of Somme engaged at Thiepval around Leipzig salient; 2nd Batt. (7th Division) in attack at Mametz; 8th Batt. at capture of Ovillers; 7th Batt. co-operated against powerful trench system from Contalmaison to Mametz, distinguishing themselves by a daring if unavailing advance on Quadrangle position in Mametz Wood. 2nd Batt. made fine night attack on Bazentin-le-Petit; on Sept. 6, prominent in capture of Schwaben Redoubt and in attacks on Stuff Redoubt.

1917.—6th Batt. in capture of Messines Ridge (June) and in attack E. and N.E. of Ypres (Oct.).

1918.—The much depleted regiment was represented in the battle of the Lys (April), 8th Batt. being prominent in the defence of the 75th Brigade against the Prussian Guards near

Kemmel. The regiment was also in final victorious advance; survivors of the service battalions in the September push of Byng's 3rd Army across the Ancre and through Sailly-Saillisel region; later, with 17th Division, in fine attack on Selle River.

**Borders**, THE (c. 55°–55° 45' N., 1° 30'–3° 30' W.), dist. on both sides of Cheviot Hills, Scotland and England; surface generally moors and hills; long inhabited by Cymric race, who were displaced by Saxons and Norsemen; was part of Northumbrian kingdom, annexed to England, 10th cent.; scene of many feuds and incessant warfare for many centuries, details of which are embodied in an extensive ballad and romantic literature.

**Bordighera**, tn., Western Riviera, Italy (43° 46' N., 7° 41' E.), 24 m. by rail E. by N. of Nice; winter resort (mean winter temp. 52½° F.). Pop. 4,000.

**Bordone**, PARIS (1500–71), Ital. artist of Venetian school; remarkable for delicate flesh tones and shot-coloured draperies; his work has much in common with his master, Titian; succeeded Palma as fashionable painter of Venice; went to Paris (1538–40) to paint court ladies; examples in the Louvre, National Gallery, Venice Academy, and many other continental galleries. His chief work is *The Fisherman giving St. Mark's Ring to the Doge* (Venice Academy), a fine pageant picture.

**Bore**. (1) A tidal wave which advances rapidly as a sort of wall into funnel-shaped bays and estuaries; 2 or 3 ft. high in Severn, Trent, and Solway Firth;

12 to 16 ft. in Amazon; 50 ft. in Bay of Fundy. (2) Hollow in barrel of gun, or diameter of barrel. See GUN.

**Boreas** (class. myth.), the N., or strictly the N.N.E., wind, the coldest in Greece; son of Astræus and Eos; generally represented as a vigorous, winged youth in the act of flying through the air.

**Bore-hole**, a hole pierced to a greater or less depth through the crust of the earth for commercial or scientific purposes; suggested by Sir Charles Parsons in 1904 and again in 1919.

**Borelli**, GIOVANNI ALFONSO (1608-79), Ital. physician and physicist; prof. of maths. at Pisa (1656), and of med. at same univ. (1657); was one of first to describe parabolic path of comets.

**Borers**, wood-boring beetles which feed upon wood into which they burrow—e.g., bark beetle.

**Borgå**, seapt., Finland (60° 25' N., 25° 42' E.); sailcloth, tobacco. Pop. 4,700.

**Borgerhout**, tn., Belgium (51° 13' N., 4° 26' E.); suburb of Antwerp. Pop. 48,900.

**Borghese**, Sienese family afterwards settled at Rome and distinguished as patrons of art. CAMILLO, who became cardinal (1596) and Pope as PAUL V. (1605), bought the Borghese Palace and built the Borghese Villa at Rome early in 17th cent. CAMILLO FILIPPO LUDOVICO (1775-1832), served in Fr. army; married Napoleon's beautiful sister Pauline; was created Prince of Guastala (1805), and sold to Napoleon the art treasures of the Borghese Villa, most of which are now in the Louvre; he separated from Pauline after

Napoleon's fall. His nephew, CAMILLO, was war minister (1848). PAOLO lost his fortune, and was compelled to sell family collections (1891-2), and while Pope Leo VIII. added its muniments to the Vatican MSS., the Ital. Government acquired the palace and valuable collection of paintings.

**Borghesi**, COUNT BARTOLOMEO (1781-1860), Ital. numismatist; catalogued the Vatican collection of coins.

**Borghorst**, tn., Prussia (52° 7' N., 7° 23' E.); cotton mills. Pop. 8,600.

**Borgia**, CESARE (1476-1507), son of Rodrigo Borgia, Pope Alexander VI.; cr. cardinal (1493); released from eccles. vows (1498); went on a diplomatic mission to France, and was invested by Louis XII. with counties of Valentinois and Diois and title of duke; married Charlotte d'Albret, sister of King of Navarre (1499); subsequently became Duke of Romagna, but his dominions and power greatly lessened on his father's death (1503), and election of Pope Julius II. (Julian della Rovere), enemy of Borgias. Cesare was killed while besieging castle of Viana (March 12, 1507); was a most typical figure of corruption of Ital. Renaissance; from his career Machiavelli drew callous precepts of *The Prince* (1535).

**Borgia**, LUCREZIA (1480-1519), sister of Cesare; puppet of the schemes of her father and brother; her third husband was Alfonso d'Este, Duke of Ferrara; in high repute at death as patroness of culture, but her name afterwards became synonymous, probably unjustly, with all the crime,

cruelty, vice, and licentiousness of the time.

**Borgognone**, AMBROGIO (c. 1445–1523), Ital. painter and architect. His masterpiece is celebrated façade of the Certosa, near Pavia. In painting he followed school of Mantegna; works full of devotional sentiment and tender feeling. Two examples are in National Gallery, London.

**Borgomanero**, tn., Italy (45° 42' N., 8° 28' E.); silk, copper, brass. Pop. 10,100.

**Borgo Pass**, mt. pass in Carpathians, near frontiers of Bukovina, Transylvania, and Rumania (47° 18' N., 25° 14' E.).

**Borgo San Donnino**, tn., Parma, Italy (44° 52' N., 10° 3' E.); walled; fine Romanesque cathedral (4th cent.). Pop. 6,300.

**Borgu**, region, W. Africa (9° 30' N., 3° 47' E.); eastern part in E. Nigeria, western part in Fr. Dahomey; rice, grain.

**Boric Acid**, or **HYDROGEN BORATE** ( $H_2BO_3$ ), known also as **BORACIC ACID**, is obtained from hot springs in Tuscany, Lipari Islands, and Western America; prepared also by purification of native boric acid, or more commonly prepared by the interaction of sulphuric acid and borax; is used as a mild antiseptic. Boric lint, or lint impregnated with the acid, is a useful dressing.

**Boring**. The process of making holes is accomplished by awls, gimlets, augers, or brace and bits; for metals rotary drills are used, either in the form of a hand implement or of a special machine driven by power, or in conjunction with a lathe. Boring into the earth, in prospecting for minerals, or in search of water

and petroleum, is done by hand within limited depths. Soft material is cut through easily by a shell auger rotated by hand and withdrawn at intervals to be cleared. Rods are added as the depth increases; lining pipes are usually driven down to prevent the sides caving in, pipes of decreasing diameter being used by stages, so that the completed lining resembles an inverted telescope. Hard material is penetrated either by percussive chisels or rotating borers. In the first case, the chisel, which is attached to the end of a series of square-section iron rods, is reciprocated by hand or steam power, a part turn being given to a screw at the top of the rods between every two blows, so that the chisel shall not strike twice in the same place. In rope boring, a round wire cable is substituted for rods, and made fast to one end of a rocking beam, the other end of which is driven by a steam engine. The diamond boring machine used for hard strata grinds away an annular hole, leaving a central core, which is afterwards extracted. The calyx drill has teeth of very hard steel in place of the diamonds. The shot drill uses small chilled steel shot to break up the rock by rolling action. See MINING; TUNNELLING.

**Boris III.** (1894– ), Tsar of Bulgaria; succeeded to throne on abdication of his father, Ferdinand, in Oct. 1918.

**Boris Godunov** (c. 1551–1605), Tsar of Russia; rose to power under Ivan the Terrible, who married his son, Theodore, to Irene, sister of Boris. Boris became omnipotent as guardian of

Theodore, and succeeded him as tsar (Feb. 1598); a pacific, prudent ruler. His life is the subject of dramas by Pushkin and Tolstoy, also of an opera by Moussorgsky.

**Borku**, dist., Central Africa (18° N., 18° 30' E.); fertile portions (irrigated); dates, barley.

**Borkum**, E. Frisian isl. (53° 36' N., 6° 43' E.); belongs to Prussia; low and sandy; commands estuary of the Ems; fortified. Pop. 3,000.

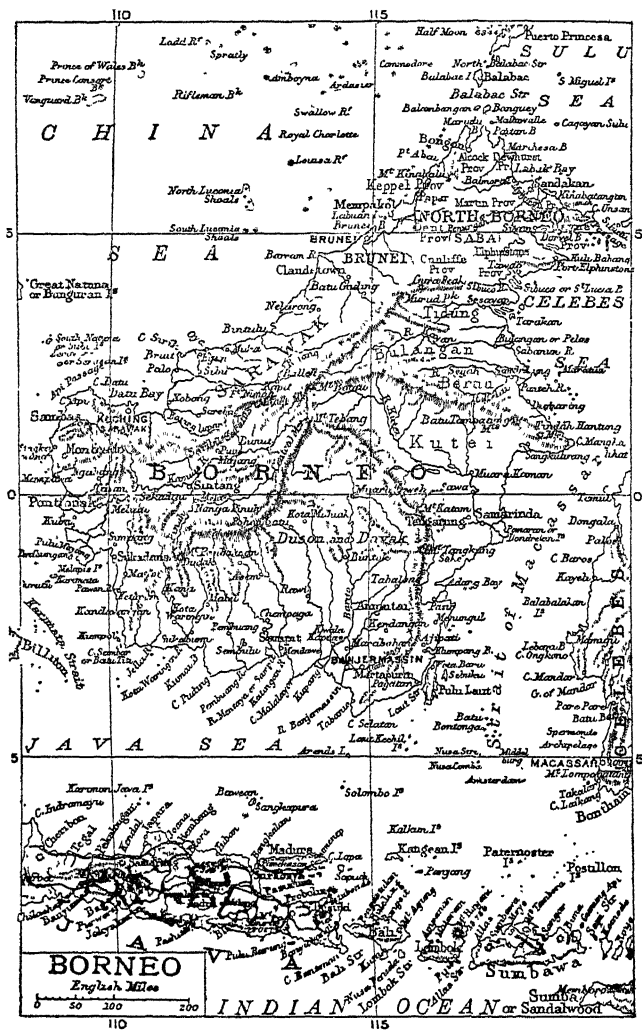
**Borne**, KARL LUDWIG (1786–1837), Ger. journalist and satirist; real name, LÖB BARUCH; studied law and med.; police actuary at Frankfort (1811–14); subsequently took up journalistic work ed. *Die Wage* (1818–21), and pub. (Paris, 1834) his *Briefe aus Paris* (1830–3); founded *La Balance* (1835). His love for democracy amounted to a passion, but his work is fragmentary and negative.

**Borneo**, large isl., Eastern Archipelago, between Australia and Fr. Indo-China, immediately N. of Java (7° N.–4° S., 109°–119° 15' E.); extreme length, over 800 m.; breadth, over 600 m.; bounded E. by Mindoro and Celebes Seas, Macassar Strait; S. by Java Sea; W. and N.W. by China Sea. Labuan, an isl. off N.W. coast of Borneo, was incorporated with Singapore (1907). About two-thirds of isl. in S.E. and S. are claimed by Dutch, while N. and N.W. (states of N. Borneo, Brunei, and Sarawak) belong to Britain. Mountain ridge runs from N.E. to S.W., height ranging from 8,000 ft. in N.E. to 3,500 in S.W.; in extreme N., Kinabalu range reaches height of 13,700 ft.;

interior mountainous, with rich river valleys and marshy plains; principal rivers, Barito, Kapuas; coast is low and swampy. Best bays are in Brunei and Brit. N. Borneo. Mean ann. temp. c. 80° F.; rainfall is heavy, averaging 120 in. per annum.

Forests produce ironwood, teak, sandalwood, ebony, indiarubber, damar, camphor, pepper, cloves, nutmegs, cinnamon, ginger, betel nuts, sago, coco-nuts, gambier, bamboo, canes, etc. Rice, sugarcane, sago, tapioca, coffee, earth-nuts, indigo, maize, hemp, cotton, tobacco, are cultivated; in Brit. part chief products are pepper, gambier, sago, rice. Minerals include coal, iron, petroleum, gold, antimony, quicksilver, platinum, diamonds. Edible birds' nests, trepang, pearls, and tortoise-shell are obtained. Exports are pepper, spices, gold dust, diamonds, drugs, timber, canes, gutta-percha, indiarubber, and many of above productions; imports general goods, clothing, machinery, hardware, opium, rice. Chief town of Sarawak, Kuching; of Brunei, Brunei; of Brit. N. Borneo, Sandakan; of Dutch Borneo, Bandjermasin. Excepting Australia and Papua, Borneo is the largest isl. in the world. Area, c. 289,000 sq. m.; pop. c. 2,000,000, including Dyaks, Malays, Arabs, etc.

*History*.—Borneo was discovered by Portuguese early in 16th cent.; during 17th cent. unsuccessful attempts were made by Spaniards, Portuguese, Dutch, and English to establish trading stations. First permanent settlement was that made by Dutch at Bandjermasin in 1733; Dutch



proceeded to make further settlements, and have mastered most of island. In 1838-41 the Malay pirates were suppressed by Rajah Brooke, who founded independent state of Sarawak, which became Brit. protectorate in 1888. In this year Brunei also came under Brit. protection.

**BRITISH NORTH BORNEO** is under administration of Brit. N. Borneo Co., which obtained royal charter in 1881; governor, appointed subject to approval of secretary of state, administers affairs in Borneo, and there is court of directors in London. Its area is about 31,106 sq. m.; pop. 208,200.

**DUTCH BORNEO** comprises two administrative dists.; of these W. Borneo occupies about 55,825 sq. m.; pop. 573,600; while E. and S. Borneo have area of 156,912 sq. m.; pop. 940,800.

*Handbook of Brit. N. Borneo*; Ireland, *Far Eastern Tropics* (1905); Furness, *Home Life of Borneo Head-Hunters* (1902); Shelford, *A Naturalist in Borneo* (1917).

**Borneo Camphor**, formed as coarse crystals in the stem of a large evergreen tree (*Dryobalanops aromatica*) in N. Borneo, Labuan, and Malay Peninsula; obtained by splitting wood into pieces; probably this was the first camphor known.

**Borneo Tallow**, fat obtained from seed kernels of various trees found in Borneo and Java; after extraction seed kernels are largely exported to Europe; fat is used for candle making, but chiefly as substitute for cocoa butter in making chocolate.

**Bornholm**, Dan. isl., Baltic (55° 10' N., 15° E.); lighthouse; kaolin, freestone; fisheries. Chief

tn., Rønne. Area, 225 sq. m.; pop. 41,000.

**Bornite**, or **ERUBESCITE** ( $\text{Cu}_3\text{FeS}_3$ ), mineral occurring in cubic crystals; bronzy colour with bluish tarnish; important copper ore of the Butte mines.

**Bornu**, state, Central Africa (12° 30' N., 13° E.), w. and s. of Lake Chad; surface flat; branches of Komadugu R. flow to Lake Chad; climate very hot and unhealthy; produces indigo, maize, millet, cotton, ground-nuts; imports calico, sugar, salt; administered by Brit. resident with several assistants; native chief still recognized; people are negroes and half-breeds; chief religion Islamism.

Bornu was independent state in Middle Ages; considerable prosperity in 15th cent.; struggle began in early 19th cent., against the Fula, who were ultimately defeated and expelled by fakir Mohammed el Anim. Prior to Great War was divided between Great Britain, France, and Germany. France added N. part to Fr. Sudan; Germany included s.w. in the Kamerun; Great Britain since 1907 has administered rest as Bornu prov. of Nigeria, and since Great War has added the Ger. section. Chief towns, Kuka and Maidugari. Area, c. 50,000 sq. m.; pop. c. 4,000,000.

**Borodin**, ALEXANDER PORFYRIEVICH (1834-87), Russian composer; a brilliant executant on several instruments. His compositions were distinctly Russian in character, and consists of symphonies, string quartets, songs, and an opera, *Prince Igor*.

**Borodino**, vil., Russia (55° 45' N., 35° 33' E.), on Kaluga R.,



here Napoleon defeated Russians under Kutusoff, Sept. 7, 1812; heavy losses both sides.

**Boroevitch**, GENERAL VON (1856-1920), Austro-Hungarian field-marshal, succeeded von Brudermann in command of 3rd Army in Lemberg section after its fall (Sept. 1914). Conducted abortive attempts to retake fortress of Przemyśl (Jan. and Feb. 1915), which developed into Carpathian battles. With assistance of Mackensen, Przemyśl and Lemberg were retaken (June 1915). In Oct. 1917 he fought in Italy in concert with Otto von Below, and his 1st and 2nd Isonzo Armies succeeded in reaching the Piave, where in June 1918 he was involved in the failure of the final effort of the Dual Monarchy. See also CARPATHIANS, *Campaign in*.

**Boron** (B=11), non-metallic element; occurs as borax (sodium borate) in some Amer. lakes; as boric acid ( $H_3BO_3$ ) in volcanic steam jets (*fumarolles*), Tuscany. There are two forms: *amorphous*, a greenish grey powder, prepared by fusing boron trioxide ( $B_2O_3$ ) with sodium; *crystalline*, by dissolving amorphous boron in aluminium. Crystals are colourless, octahedral, hard; sp. gr., 2.68; generally contain carbon or aluminium; boron combines readily with nitrogen, chlorine, and sulphur.

**Borough** (A.S. *burh*, a fortified stronghold or camp), the name of a town possessing certain governmental rights. In many places an A.S. 'burh' grew up on or near the site of a Roman colony, but the case is not proven for the former developing out of the

latter. The 'burh' was the stronghold of a king or a tribe, with a 'wall' or 'hedge' around it. It often became a political, military, and commercial centre. In the 10th cent. the bor. court or 'moot' first appears, with a definite area of jurisdiction, but the feudal castle of the Norman conquerors sometimes overshadowed it. 'Royal boroughs' were created by the king; the burgesses paid certain annual rents to him. Various privileges were granted by successive kings to London.

Eng. boroughs developed much from the 12th cent. onwards, when various guilds began to be formed, and charters were granted with taxation and privileges more defined. In Tudor and Stewart times the monarchs, by creating boroughs and nominating members of the governing body, utilized the bor. machinery for political purposes. The Corporation Act of 1661 decreed that all members of town councils must be communicants. By the beginning of the 19th cent. many boroughs had become very corrupt, the burgesses often being only a very small proportion of the total number of townsmen. Frequently the town corporation gave no account of the revenues they received, and divided the profits among themselves (Prof. Maitland, in his remarkable work, *Township and Borough*, speaks of the mediæval lack of distinction between 'corporateness' and 'commonness'). On the political side, improvement came with the Reform Bill of 1832; on the munic. side, by the Municipal Corporations Act of 1835, which gave the municipal franchise.

In Ireland bor. life began in the reign of Henry II., and at the plantation of Ulster by James I. many close boroughs were created.

Scot. boroughs have certain peculiarities, but many of their anc. privileges are now lost.

*Borough English*, name of old Eng. custom (still existing in certain parts of the country) by which lands are made the inheritance of the youngest son.

See various works by C. Gross, M. Bateson, and F. W. Maitland, especially the latter's *Township and Borough*.

**Borough**, STEVEN (1525-84), Eng. navigator; accompanied Sir Hugh Willoughby (1553) in his search for a northern passage to Cathay; discovered Kara Strait (1556). His brother, WILLIAM (1536-99), commanded *Lion* in Drake's Cadiz expedition (1587); wrote *A Discourse of the Variation of the Compass* (1581).

**Borough Councils**. See LOCAL GOVERNMENT.

**Borovitchi**, tn., Novgorod, Russia (58° 23' N., 33° 53' E.); leather, timber. Pop. 10,000.

**Borronean Islands**, four small islands, Lake Maggiore, Italy (45° 54' N., 8° 33' E.); Isola Bella has an Italian 17th cent. baronial palace; Isola Madre, a botanical garden.

**Borromeo**, CARLO (1538-84), saint and cardinal; studied at Pavia; cr. cardinal and archbishop of Milan by his uncle, Pope Pius IV. (1560); took part in Council of Trent, after which drew up the exposition of R.C. doctrine known as *Catechismus Romanus*; did much for moral reform of Church and foundation

of educational establishments; sacrificed whole personal fortune to charity and good works; canonized (1610); the tercentenary of his canonization was made occasion of a papal encyclical against modernism.

**Borrow**, GEORGE HENRY (1803-81), Eng. author and philologist; born in Norfolk; son of a soldier; apprenticed to a solicitor; in 1824 went to London and found work as a publisher's hack. In 1833 he entered the employment of the Bible Soc., and was sent to Petrograd, and afterwards to Spain. In the latter country he associated with the Zingali, in whose language he found a close affinity with that of the Norfolk gipsies he had known in his youth. He returned to England in 1839, and in 1841 pub. *The Zingala*, an exhaustive work on the gipsy languages. It was followed by *The Bible in Spain* (1843), *Lavengro* (1851), *The Romany Rye* (1857), *Wild Wales* (1862), and his most important philological work, *Romano Lavo Lil* (1874). Having spent a wandering life, Borrow acquired a wide knowledge of humanity, and, being practically self-educated, his method of expression is distinctly individual.

Shorter, *Life* (1920).

**Borrowdale**, picturesque valley, Cumberland, England (54° 32' N., 3° 9' W.); slate quarries.

*Borrowdale Volcanic Series*, an immense group of volcanic rocks, comprising slates, lavas, tuffs, breccias, granites, porphyries, and forming the central area of the Lake District.

**Borrowstounness**. See under BO'NESS.

**Borsa**, vil., Rumania (47° 40' N., 24° 40' E.), prior to 1919 in Hungary; has copper and lead mines. Pop. 8,000.

**Borsig**. (1) JOHANN KARL FRIEDRICH AUGUST (1804-53), Ger. manufacturer, began business in 1837; with help of Eng. workmen established a locomotive industry. By 1850 he was competing with Eng. markets, and had bought iron mines in Schleswig. (2) ALBERT (1829-79), son of above, extended business by purchasing coal mines in Silesia and by erecting plant for the production of iron and steel.

**Borsna**, tn., Chernigov, Ukraine (51° 16' N., 32° 22' E.), on a sub-trib. of the Dnieper; tanyards; tobacco. Pop. 13,000.

**Borstal System**, the name given to a recently established method of preventing young persons above the age of childhood from entering on a career of crime. The system was instituted at Borstal prison, Rochester (1902), a soc. (the Borstal Association) being formed to assist young discharged prisoners to find suitable employment and make a fresh start in life, and the prison authorities co-operating by segregating such prisoners between the ages of sixteen and twenty-one, under sentences of more than twelve months. The Prevention of Crimes Act, 1908, made the system general. The term of detention in a Borstal institution is from one to three years, but may be extended.

**Borthwick Castle**, Midlothian, Scotland (55° 49' N., 3° 2' W.); visited by Mary Queen of Scots and Bothwell (1567).

**Borzoi**, Russian wolfhound;

has long powerful jaws, narrow but deep chest, and white coat; height, 26-33 in. As companion is docile and affectionate.

**Bos**, the wild ox or urus of Romans, the ancestor of domestic cattle (*Bos taurus*); has been extinct since 17th cent.

**Bosanquet**, BERNARD (1848- ), Eng. philosopher; lecturer at Univ. Coll., Oxford (1871-81); prof. of moral philosophy, St. Andrews (1903-8); author of *Logic, or Morphology of Knowledge; History of Aesthetic; Knowledge and Reality, etc.*

**Bosboom - Toussaint**, ANNA LUISE (1812-86), Dutch novelist; famous as a writer of historical stories, including *The Earl of Devonshire, Leicester in the Netherlands, The House of Lauernesse, and Gideon Florensz.*

**Boscawen**, SIR EDWARD (1711-61), Brit. admiral; co-operated with Amherst in the capture of Louisburg and Cape Breton (1758); destroyed the Fr. Toulon squadron in Lagos Bay (1759).

**Bosch**. See **ÆKEN**.

**Boscobel**, par., Shropshire, England (52° 42' N., 2° 22' W.); contains house where Charles II. hid after Worcester (1651).

**Boscotreale** and **BOSCOTRECASE**, two neighbouring communes at base of Mt. Vesuvius, Italy (40° 44' N., 14° 28' E.); excavations at Boscotreale (1891-5) yielded rich specimens of Gr. and Roman art known as 'Boscotreale treasure,' much of which is in the Louvre. Pop., Boscotreale, 9,500; Boscotrease, 10,000.

**Boshof**, chief tn. and dist. of same name, Orange Free State, S. Africa (28° 32' S., 25° 18' E.); pastoral district. Pop. 1,300.

**Bosio**, FRANÇOIS JOSEPH, BARON (1769-1845), Fr. sculptor, was chosen by Napoleon to execute bas-reliefs for column in Place Vendôme; works are distinguished by grace and elaborate finish—e.g., *Cupid darting Arrows*, *Hyacinthe*, etc.

**Bosna Serai**. See SERAJEVO.

**Bosnia - Herzegovina**, dists., Jugo-Slavia (44° N., 18° E.); Dinaric Alps run from N.W. to S.E., surface sloping thence N.E. to Save basin, S.W. to Adriatic. Herzegovina, in S., is bare and rocky: Bosnia, to N., has mt. forests and fertile valleys; chief rivers, Save and its affluents; large part of surface wooded—lime, beech, pine, larch. Great majority of population are engaged in agriculture; chief crops—tobacco, grain, fruits, beet, flax, hemp; cattle, sheep, swine, horses, mules, are largely raised; silk culture is being introduced, and wine is made; anthracite and iron ore mined. Exports include timber, fruit, coal, iron, chemicals, live stock; imports include oils, coffee, beer, wine, spirits, wool, cottons, silk, grain, flour, rice, paper, leather, glass, china, hardware, machinery, soap. Cap. of Bosnia, Serajevo; of Herzegovina, Mostar. There are ry. communications with Brod on Danube and Gravosa on Adriatic; mileage over 1,200.

Inhabitants are Croato-Serbians; Span. Jews, gipsies, and colonists of other nationalities also represented. Principal religions are Oriental Orthodox, Mohammedan, R.C., and there are some Jews, Evangelicals, and other Christians. Education is free, and, under certain cir-

cumstances, compulsory. Area, 19,760 sq. m.; pop 1,900,000.

*History*.—The Slavs settled in Bosnia in 6th and 7th cents., and for a time maintained their independence; subject to Hungary, 11th-13th cent.; to Serbia in 14th cent., attaining independence under Twartko in 1370. After latter's death the kingdom began to decline and became involved in war with Turks, who ultimately subdued Bosnia in 1463, Herzegovina in 1483. Under Turkish rule natives were cruelly oppressed; Christians constantly persecuted; murder was considered no crime, robbery and brigandage were recognized professions. Revolts occurred in 1849 and 1875. In 1878, by Treaty of Berlin, provinces were handed over to Austria-Hungary for administration and military occupation; in 1908 they were definitely annexed to that empire; discontent culminated in murder of Archduke Francis Ferdinand (June 28, 1914), Austria's ultimatum to Serbia, and the Great War. In 1918, on dissolution of dual monarchy, the provinces joined the Jugo-Slav state.

Asboth, *Official Tour through Bosnia and Herzegovina* (1890); Olivier, *Bosnie et l'Herzégovine* (1901); Holbach, *Bosnia and Herzegovina* (1910).

**Bosporus**, or BOSPHORUS, strait (17 m. long) between Black Sea and Sea of Marmora (41° 10' N., 29° 5' E.); powers guaranteed by treaties, 1841 and 1878, that no ships of war should enter Black Sea without leave of Turkey. Shortly after the outbreak of the Great War, the Ger.

cruisers *Goeben* and *Breslau* took refuge in the strait and were purchased by Turkey. Allied submarines penetrated as far as the Golden Horn, and sank several Turk. vessels. The outer ports of the Bosphorus were shelled from a distance by Russian war-ships on March 28, 1915; also on April 26–27 during Allied landing on Gallipoli, and on May 2. After the surrender of Turkey an Anglo-French fleet, under Admiral Callaghan, sailed up to Constantinople (Nov. 13, 1918). By Treaty of Peace with Turkey (May 1920) the Bosphorus was placed under a commission of the League of Nations.

**Bosruck**, tunnel in Austrian Alps, about 3 m. long; alt. 2,400 ft. (c. 47° 40' N., 14° 14' E.).

**Boss**, the raised outside centre of a shield or buckler; a protuberant ornament; in arch., a projecting ornament; colloquial (of Amer. origin), an employer, a master-workman; a party leader (see **BOSS RULE**).

**Bossi**, GIUSEPPE (1777–1816), Ital. artist and writer; his brush-work was not remarkable, but his critical writings are valuable, and include *Del Cenacolo di Leonardo da Vinci*, *Delle opinioni di Leonardo*, etc.; he was secretary of the Milan Academy, and an intimate friend of Canova, who executed monument to him in Ambrosian Library, Milan.

**Boss Rule**, Amer. term for a corrupt system of national and munic. politics, formerly very prevalent in U.S., in which party leader or boss organizes and manipulates elections by every kind of dubious means, and rewards his subordinates with

the spoils of office. See also **TAMMANY**.

**Bossuet**, JACQUES BÉNIGNE (1627–1704), Fr. theologian and orator, ordained 1652; came to Paris (1659), and became famous as a preacher, especially for his *oraisons funèbres* (funeral sermons); tutor to the dauphin, son of Louis XIV. (1670). Bossuet was a man of keen intellect, but entirely opposed to disorder and anarchy, and therefore a firm believer in absolutism in Church and State, which he defended in his *Discours sur l'Histoire Universelle*. He applauded, therefore, the Revocation of the Edict of Nantes. But he defended the liberties of the Fr. Church against the Papacy in the *Defensio Cleri Gallicani*, over which subject he was involved in a bitter controversy with Fénelon and the Ultramontanes. He is one of the greatest figures of the monarchy of Louis XIV.

Rébelliau, *Bossuet*.

**Bossut**, CHARLES (1730–1814), Fr. mathematician, successively prof. of maths. at Mézières and the Ecole Polytechnique; author of *L'Histoire Générale des Mathématiques*; ed. Pascal's works.

**Boston**, seapt. and mrkt. tn., Lincolnshire, England (52° 58' N.; 0° 1' W.); deep-sea fishing; manufacture of agricultural implements; church with famous tower, known locally as 'Boston Stump.' Pop. 16,700.

**Boston**, cap., Massachusetts, fifth city and second seapt. of U.S. (42° 22' N., 71° 5' W.), on Boston Harbour, at mouth of Charles and Mystic rivers. Boston is a great railway centre; number of lines of steamers ply

regularly to foreign ports; has excellent harbour accommodation and a good system of street railways and subways. Imports include wool and woollens, chemicals, iron and steel manufactures, wood, leather, fruit, fish, paper stock; exports provisions, live cattle, bread-stuffs, cottons, leather goods, wood, iron and steel manufactures, spirits.

Older part of town noted for narrow, irregular streets; newer part regularly laid out; main thoroughfare, Washington Street. Most famous buildings are public library, second largest in America, old State House, and Faneuil Hall, where resistance against Britain was first declaimed by revolutionary orators. In northern suburb of Charlestown is Bunker Hill Monument, commemorating famous battle in War of Independence. There are beautiful parks, including Franklin Park, and many churches, including R.C. cathedral. Educational institutes include Boston Univ., R.C. Coll., medical school of Harvard Univ., fine art school, and music conservatory; and there are many schools, including over 300 primary schools. Boston was for long the centre of culture in America, and many great literary men, such as Longfellow, Lowell, Emerson, Whittier, have been associated with it; birthplace of Benjamin Franklin and Poe.

*History.*—Boston has developed from a settlement made in 1630 by members of the Massachusetts Bay Company, led by John Winthrop. Most of early settlers were Puritans and came from Lincolnshire. First called

Trimountaine, name was afterwards changed to Boston. It was chosen as capital in 1632, and soon became principal seaport in America. In 1765 the Stamp Act was bitterly opposed here, and the 'Boston tea party' (1773), when 350 chests of tea were thrown into the harbour, was a prelude of the American revolution. Boston played an important part in War of Independence and abolition of slavery. Pop. c. 750,000.

Lodge, *Boston*; Hale, *Historic Boston*.

**Boston, THOMAS** (1676–1732), Scot. theologian; wrote famous *Human Nature in its Fourfold State* (1720). According to Dr. M'Crie, his influence has been second only to that of Knox.

**Boström, CHRISTOFFER JACOB** (1797–1866), Swed. philosopher; formulated a rational system of idealism, which is somewhat akin to the philosophy of Spinoza.

**Boström, ERIK GUSTAF** (1842–1907), Swed. politician, leader of Conservative party; twice prime minister; resigned (1901) so that no obstacle should stand in way of reconciliation with Norway.

**Boswell, SIR ALEXANDER** (1775–1822), Scot. antiquary and poet, son of biographer of Johnson; author of well-known songs, 'Jenny's Bawbee' and 'Jenny dang the Weaver'; killed in duel.

**Boswell, JAMES** (1740–95), Scot. author; son of Alexander Boswell of Auchinleck, who subsequently became judge of the supreme court and assumed the title of Lord Auchinleck; educated at the high school and univ. of Edinburgh; was called to the Eng. and Scot. bar, and

practised with little success as an advocate. He married his cousin, Margaret Montgomery, and, after succeeding to his father's estate, was enabled to live in independence. In character he was weak, foolish, vain, incontinent, and addicted to drunkenness. Yet for all his folly he possessed a distinct genius for hunting down celebrities, and had, as Goldsmith said, 'the faculty of sticking.' As the biographer of Samuel Johnson, he produced a work which is unique of its kind, and is indisputably one of the masterpieces of Eng. literature. His first meeting with Dr. Johnson took place in 1763, at Davies's bookshop in London, when the great lexicographer was fifty-four, and Boswell twenty-three. Thereafter they met frequently; 'Bozzy' was elected a member of the Literary Club, and travelled with Johnson in Scotland, the result being the *Journal of a Tour in the Hebrides* (pub. 1786). His *magnum opus*, *The Life of Samuel Johnson, LL.D.*, was first pub. in 1791, and met with instantaneous success. During his earlier continental travels he became acquainted with Pascal di Paoli, the Corsican chief; pub. his *Account of Corsica* in 1768.

Leask, *Life of Boswell* (1896).

**Boswellia**, genus of about a dozen species of trees (family Burseraceæ), allied to orange and native to India and Africa; notable for gum resin olibanum, which is said to be the frankincense of the Bible.

**Bosworth, JOSEPH** (1789–1876), A.S. scholar; Rawlinson prof. of Anglo-Saxon at Oxford; wrote

*Anglo-Saxon Grammar*, and compiled a dictionary.

**Bosworth Field**, in Leicestershire, England (52° 37' N., 1° 25' W.), where Henry Tudor defeated Richard III. (1485).

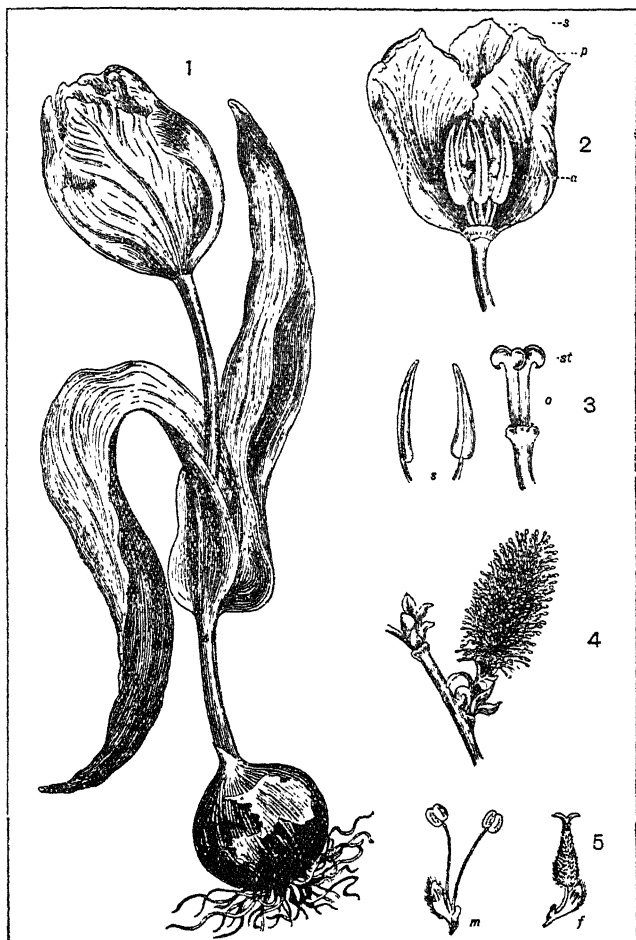
**Botanic Gardens.** Purely scientific gardens are first found in 16th cent., when universities and private scholars began to study bot. for its own sake and various Ital. cities set up botanic gardens. The royal gardens established in Paris (1570) developed into Jardin des Plantes. Botanic gardens were instituted at Oxford (1632), Chelsea (1673), Edinburgh (1680); Kew Botanic Gardens (1760) are unsurpassed in the world; Berlin, Petrograd, Vienna also possess famous botanic gardens.

**Botany**, the branch of biology which deals with plants. It is divided into the following sections:

(1) *Morphology*, treating of the external form of plants and their internal construction—the last-named study being also called *Histology* or *Microscopic Anatomy*.

(2) *Physiology*, dealing with the life processes of the plant as a whole, the functions of its various organs, and the method of its growth and development.

(3) *Systematic Botany* or *Classification*, the principles upon which plants are classified. Two systems of classification are distinguished: (a) *The Artificial* or *Linneæan* (1735; now obsolete), based on character and arrangement of one set of organs (stamens and pistil); (b) *Natural System*, De Jussieu (1789), De Candolle (1813), Lindley (1845), based on natural relationship, and grouping



*Botany : External Morphology.*

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1. External morphology of tulip, showing roots, modified stem or bulb, leaves, and flower. 2. Section of tulip flower : *s*, one of outer leaves or sepals ; *p*, one of inner leaves or petals ; *a*, anther of stamen. 3. Stamens and gynoecium of tulip ; *a*, ovary, *st*, stigma—the style is here absent—*s*, stamens. 4. Catkin of willow, a dioecious plant. 5. Individual florets of willow, *m*, male flower, with two stamens ; *f*, female flower, with ovary crowned with cleft stigma. In these flowers sepals and petals are absent.



together species, genera, and orders most resembling each other in the sum total of characters. The most generally adopted modern system groups plants as follows:

Division I. *Cryptogams*—Flowerless plants: class 1, *Thallophytes* (Bacteria, Algæ, Fungi); class 2, *Bryophytes* (Mosses, Liverworts); class 3, *Pterydophytes* (Ferns, Horsetails).

Division II. *Phanerogams*—Flowering plants: class 1, *Gymnosperms* (Cicads, Conifers); class 2, *Angiosperms* (Grasses, Herbs, Shrubs, Trees), subclass *a*, *Monocotyledons* (seed with one seed-leaf—Palms), *b*, *Dicotyledons* (seed with two seed-leaves).

(4) *Geographical Botany*, investigating the natural distribution of plants and the causes influencing it.

(5) *Palæontological Botany*, the study of the forms of plants found as fossils in the various geological strata.

M. C. Stopes, *Botany* (Jack, 1912); S. H. Vines, *Students' Textbook of Botany*; *Textbook of Botany*, E. Strassburger, Noll, and others (1898).

**Botany Bay**, bay and suburb of Sydney, New South Wales ( $34^{\circ}$  s.,  $151^{\circ} 13'$  e.); received its name from the richness of its flora; name was applied popularly but erroneously to convict settlements in Australia generally, as Botany Bay, though original landing-place of convicts, was not a settlement; now a popular seaside resort. Pop. 7,200.

**Bot-flies** (*Estridæ*) are large, strong flies, the larvæ of which bore in the flesh chiefly of domesticated animals. *Gastrophilus* larvæ, licked off by horses, at-

tach themselves to the stomach; *Hypoderma* larvæ bore beneath the skin of cattle, forming 'warbles'; and *Æstrus* larvæ are laid alive by the adults in the nostrils of sheep.

**Both**, JAN (1610–52), Dutch painter of Ital. school, influenced by Claude Lorraine; work remarkable for warm colour and beautiful sunlight effects.

**Botha**, LOUIS (1863–1919), first prime minister of Union of S. Africa (1910), born at Greytown, Natal. He was a member of the first Volksraad of the Transvaal; succeeded General Joubert as commander of the Transvaal Boers during S. African War (1899–1902), in which he greatly distinguished himself; premier of Transvaal (1907–10). Created hon. general of the Brit. army (1912), he warmly espoused the Brit. cause in the Great War, subdued S. African rebellion (1914), and commanded the Union forces in S.W. Africa, receiving the surrender of the Germans (July 9, 1915). He represented S. Africa at the Paris Peace Conference (1919).

**Bothmer**, FELIX, GRAF VON (1852– ), Bavarian general, commanded composite Prussian army corps on Carpathian front, which advanced to the line of the Strypa (1915), where it held its ground during the Russian summer offensive (1916), but was outflanked and compelled to retire in July, and again in July 1917 before the revolutionary armies, which it finally drove back to the Russian frontier.

**Bothnia**, GULF OF, northern arm of Baltic Sea ( $62^{\circ}$  N.,  $20^{\circ}$  E.). See BALTIC SEA.

**Bothwell**, tn. and par., N. Lanarkshire, Scotland (55° 48' N., 4° 4' W.); coal mines and freestone quarries; iron and steel works. Covenanters defeated at Bothwell Brig (1679). Pop. (par.) 54,900; (tn.) 3,000.

**Bothwell**, JAMES HEPBURN, 4TH EARL OF (c. 1536–78), lord high admiral of Scotland (1556); P.C. (1561); became one of chief advisers of Mary Queen of Scots, and obtained complete ascendancy over her. After Darnley's murder (Feb. 9, 1567) Bothwell became more powerful than ever; cr. Duke of Orkney and Shetland, and married Mary (May 1567). The lords revolted; Bothwell was driven into exile and Mary forced to abdicate; divorced from Mary (Sept. 1570), and after her downfall imprisoned in Zealand till his death.

**Bothy**, or **BOTHIE**, in Scotland, is a place where the servants, especially the male unmarried servants, of a farm are accommodated; usually consists of a single apartment furnished with barest necessities. The system is most prevalent in E. and N.E. counties, but is gradually disappearing.

**Botone**, in heraldry, said of a cross the ends of whose arms are shaped like trefoils or buds.

**Botori**, game played in Jap. boys' schools; 50 to 100 players a side. Two high poles are fixed in the ground about 200 yds. apart, and each side endeavours to capture the other's pole.

**Botoshani**, or **BOTOSANI**, chief tn. of dist. of same name, Rumania (47° 45' N., 26° 40' E.); starch and flour mills; boyar palaces in suburbs. Pop. 34,200.

**Bo Tree**, or **PEEPUL**, a species of fig tree (*Ficus religiosa*), worshipped by Buddhists as the 'tree of wisdom' under which Sakyamuni sat while he devised Buddhist system.

**Botrel**, THÉODORE JEAN MARIE (1863– ), Fr. poet, was officially known from beginning of Great War as the *Chansonnier des Armées*, his duty being to visit camps, hospitals, etc., in order to recite and sing his patriotic poems; has pub. many collections of songs inspired by wild nature, and also some of the most rousing battle and march songs of the war—e.g., *Les Chants du Bivouac*, etc.

**Botta**. (1) CARLO GIUSEPPE GUGLIELMO (1766–1837), Piedmontese historical writer; became naturalized Fr. citizen; rector of Rouen Univ. (1817), but local clerical influence forced him to resign; pub. (1824) *History of Italy*, from 1789–1814. (2) PAUL EMILE (1802–70), Ital. archæologist, son of above; Fr. consul at Alexandria, Jerusalem, and Mosul; as result of excavations discovered palace of Sargon (722–705 B.C.) and other fine specimens of Assyrian architecture.

**Bottesini**, GIOVANNI (1823–89), Ital. composer and conductor; was a celebrated double-bass player; enjoyed world-wide reputation as a conductor; composed numerous operas, including *Christoforo Colombo* (1847), *L'Assedio di Firenze* (1856). His *Garden of Olivet* was produced at Norwich Festival (1887).

**Botticelli**, SANDRO (1444–1510), Ital. artist of the Florentine school; his real name was Alessandro di Mariano di Vanni

dei Filipepi; born at Florence; son of a tanner; received his nickname, 'Botticelli' ('Little Cask'), from the small barrel Giovanni's door as a sign of his trade, a broker. Apprenticed at fifteen to a goldsmith, he early developed artistic ambitions, and entered the studio of Fra Lippo Lippi (1460), under whom he spent several years, afterwards working with the brothers Pollaiuolo, during which time he won considerable fame amongst the art-lovers of Florence. His famous picture, *The Adoration*, now in the National Gallery, was painted whilst the young artist was still with Fra Lippo Lippi. Botticelli found favour in the eyes of the Medici family, and his future progress, both artistically and financially, was continuous for many years. One of the greatest artists of the earlier Renaissance period, he has been called 'the reanimate Greek,' and his subjects, drawn almost entirely from classic and Scriptural sources, are marked by an atmosphere of Neoplatonism. He, however, created a new type of beauty of which Athens knew nothing, even as he essayed to grasp the significance of Hellenism and brought it into the flower-carpeted Ital. meadows. Amongst his most famous pictures are *The Adoration* (already named), *Spring*, *The Birth of Venus*, *Mars and Venus*, *Pallas and the Centaur*, *The Nativity*, and numerous Madonnas.

Henry B. Binns, *Botticelli: Lives*, by Julia Cartwright and Herbert P. Horne.

**Böttiger**, KARL WILHELM (1807-78), Swed. poet and man

of letters; prof. of modern literature and æsthetics at Upsala; wrote lyrical poetry and trans. Tasso and Dante.

**Bottle**, a vessel, now usually of glass or earthenware, for the storing of liquid. The ancients commonly used bottles made of the skins of goats or other animals; the 'leather bottle' was a common object of daily use down to the end of the 17th cent., and skin bottles are still extensively used in parts of Asia. The use of glass bottles has led to the invention of numerous machines for bottling. See BOTTLING MACHINE.

**Bottle-gourd**, or CALABASH (*Lagenaria*, from Lat. *lagena*, 'bottle'), Ind. ann. flowering plant; fruit of enormous size; has hard rind, which when dried serves to hold liquids.

**Bottle-nose**, name applied to several members of order Cetacea, but more particularly to bottle-nose whale (*Hyperoödon rostratus*), a member of sperm whale family found in N. Atlantic; also popularly applied to the puffin.

**Bottling Machine**, specifically a machine for filling bottles, may be held to denote the varied and elaborate machinery of a modern bottling establishment. This includes machinery for the cleansing of bottles and corks, the former by means of brushes revolved by power, for filling (by means of siphons) and for corking. The aerated water machine is complicated; the best of the kind is that of Codd. The wiring of corks, the labelling of bottles, and the covering of the cork by an ornamental cap are also performed by machinery.

**Bottomley**, HORATIO W., politician, journalist, and sportsman, M.P. for S. Hackney (1906-12, and again since 1918); founded *Financial Times*, and *John Bull*, of which he is editor. Defendant in famous cases *Reg. v. Bottomley and Others* (1893), and *Rex v. Bottomley and Others* (1909). Owns and runs racehorses.

**Bottomry**, in mar. law, a contract by which money is advanced for enabling a ship to proceed on her voyage, the ship's *bottom* (figurative for the whole ship) and the freight earned being made liable for repayment of the loan, with interest at a high rate. No personal liability attaches to the shipowner, so that in the event of a total loss the lender gets nothing. The corresponding bond by which cargo is made liable is called *respondentia*, but in modern practice separate contracts are unusual, bottomry bonds usually including the whole. Unlike mortgages, their priority ranks in inverse order to their dates, the latest ranking first.

**Bottrop**, comm. dist., Westphalia, Prussia (51° 32' N., 6° 39' E.); coal mines. Pop. 47,100.

**Botzen**. See BOZEN.

**Bouch**, SIR THOMAS (1822-80), Eng. civil engineer; constructed first Tay Bridge, which collapsed in 1879.

**Bouchardon**, EDMÉ (1698-1762), Fr. sculptor; was regarded as most perfect worker in plastic art of his day; one of his great works was the equestrian statue of Louis xv. for Paris, destroyed during the Revolution. His *Cupid fashioning a Bow out of the Club of Hercules* is in the Louvre.

**Boucher de Crèvecœur de Perthes**, JACQUES (1738-1808), Fr. geologist and antiquary; wrote on Stone Age and prehistoric man (1846); now recognized as one of fathers of science of prehistoric anthropology.

**Bouches-du-Rhone**, dep., S.E. France (43° 35' N., 5° E.), in Rhône delta, formerly part of Provence; contains three arrondissements—Marseilles, Aix, Arles; hilly in E.; large tracts stony country (Crau) partly reclaimed, swamp (Etang de Berre), and prairie (Camargue); olives, mulberries, vines, and fruits; horse and cattle rearing. Area, 2,025 sq. m.; pop. 805,500.

**Boucicault**. (1) DION (1822-90), Irish dramatist and actor; played with Macready and Webster, and was regarded as best stage Irishman of his time. His plays, which met with immense popular success, and are still played, include *London Assurance*, *The Colleen Bawn*, *Arrah-na-Pogue*, and *The Shaughraun*. (2) His son DION appeared on New York stage (1897); has since been manager of the Court theatre, Criterion, Duke of York's, etc.

**Boudin**, EUGÈNE (1825-98), Fr. artist; became famous as a painter of marine pictures. Baudelaire pronounced him 'the master of the sky.' His *Coucher de Soleil* and *Lamenneurs* brought him gold medal (1889).

**Boufarik**, tn., Algeria (36° 42' N., 2° 52' E.); cotton goods, perfumes. Pop. 11,000.

**Boufflers**, LOUIS FRANÇOIS, DUC DE (1644-1711), Marshal of France; served under Turenne, and greatly distinguished himself at Malplaquet (1709).

**Bougainville**, largest of Solomon Islands, Pacific Ocean (6° s., 155° e.); timber; taken from Germans by Australians (Jan. 1, 1915). Area, 3,000 sq. m.

**Bougainville**, LOUIS ANTOINE DE (1729–1811), Fr. navigator; entered army (1753), becoming a colonel (1756); accomplished first Fr. circumnavigation of the world (1766–9); made *chef d'escadre* (1779); field-marshal in army (1780); vice-admiral (1791); and subsequently a senator and count of the empire.

**Bougainvillea**, genus of about ten climbing plants of family Nyctaginaceæ, related to amaranths and chenopods; natives of S. America, but are familiar greenhouse plants.

**Bough**, SAMUEL (1822–78), Brit. landscape painter, excelling chiefly in water colour; self-taught, but a master of effect in light and shade composition, and showed great boldness of execution. Pictures in National Gallery, Edinburgh, and in Glasgow Art Gallery.

**Bought and Sold Notes**, record of a transaction which a broker sends to the principal parties; duly signed they constitute a sufficient memorandum for the purposes of the Sale of Goods Act, 1893. See **BROKER**.

**Boughton**, GEORGE HENRY (1833–1905), Anglo-Amer. painter; illustrated *The Scarlet Letter*, *Rip Van Winkle*; collaborated with E. A. Abbey in *Sketching Rambles in Holland*; wrote short stories of considerable merit.

**Bougie**, fort. seapt., Algeria (36° 46' N., 5° 6' E.); at one time greatest commercial centre N. African coast, and cap. of

Berber kingdom, Beni-Hammad; captured by French (1833); oils, wax. Pop. 19,000.

**Bouguereau**, GUILLAUME ADOLPHE (1825–1905), Fr. artist; was a versatile painter in many styles, but chiefly known for somewhat heavy treatment of classical subjects and the nude.

**Bouilhet**, LOUIS HYACINTHE (1822–69), Fr. poet and dramatist; his plays *Madame de Montarcy*, *Hélène Peyron*, and *La Conjuration d'Amboise* achieved considerable success.

**Bouillabaisse**, popular Fr. dish, especially in the south, consisting of a stew of all kinds of fish with herbs and condiments. See Thackeray's well-known 'Ballad of Bouillabaisse.'

**Bouillon**, tn., prov. Luxembourg, Belgium (49° 48' N., 5° 5' E.); tourist centre; castle of Godfrey de Bouillon. Pop. 2,700.

**Bouis**, JULES (1822–86), Fr. chemist, was successively chemist at laboratory of Academy of Medicine, assayer to the Mint, and prof. of toxicology at School of Pharmacy in Paris; produced treatises on gas poisoning, etc.

**Boulainvilliers**, HENRI, COUNT DE (1658–1722), Fr. historian and political philosopher; author of works on Fr. and Arab. history.

**Boulanger**, GEORGE ERNEST JEAN MARIE (1837–91), French general and agitator, director of infantry at War Office (1882); became war minister (1886–7), and created the 'Boulangist' democratic agitation which threw France into confusion; took up a command at Clermont-Ferrand (1887); insubordination led to loss of this post (1888), and he fought a duel with Floquet, the

premier, in the same year; returned for Paris (1889), but, accused of monarchical intrigues and misapplying public funds, he fled; committed suicide at Brussels (1891); described by Jules Ferry as a 'music-hall St. Arnaud.' See Barrès, *L'Appel au Soldat*.

**Boulay de la Meurthe**, ANTOINE JACQUES CLAUDE JOSEPH, COMTE (1761–1840), Fr. author and politician; was active in planning fall of Directory (1799); minister of state during the 'Hundred Days.' Author of *Bourrienne et ses Erreurs* (1830).

**Boulder**, tn., Colorado, U.S. (40° 3' N., 105° 16' W.); seat of Colorado Univ.; gold and silver; health resort. Pop. 9,500.

**Boulder Clay**, typically stiff unstratified clay, packed with stones varying from rock fragments to huge blocks and boulders weighing many tons; colour and composition vary with underlying rocks; they also contain stones from distant sources; these erratics, often huge boulders, show abraded flattened areas, sometimes polished, but oftener deeply scratched and scored; produced by glacial action. See Geikie's *Great Ice Age*.

**Boulē**, an advisory council in ancient Greece. The best known is the Athenian Boulē, which was at first the same as the Areopagus, but under the Solonian scheme became a committee of the Ecclesia. See under AREOPAGUS; ECCLESIA.

**Boulevard**, name originally given to the ramparts of a town; now applied to broad avenues planted with rows of trees—e.g., the Parisian boulevards.

**Boulevardier**, epithet descriptive of class of literature and *esprit* that flourished during Second Empire in France; the *esprit boulevardier* denoted the pleasure-seeking and materialistic mood of the time; in literature a prominent feature was the vogue of operettas.

**Boulger**, DEMETRIUS CHARLES (1853– ), English historian, traveller, and writer on Asiatic politics; he established *Asiatic Quarterly Review* (1885) jointly with Sir Lepel Griffin; authority on Asiatic and Belgian and Congo problems.

**Boulle**, ANDRÉ CHARLES (1642–1732), Fr. cabinet-maker, whose Boulle (or Buhl) work became famous. He did much decoration for the court of Louis XIV. See BUHL WORK.

**Boulogne-sur-Mer**, seapt., Pas-de-Calais, France (50° 43' N., 1° 37' E.), 130 m. N.N.W. of Paris, and connected with Folkestone by daily cross-Channel service; divided into Haute-Ville and Basse-Ville; former surrounded by ramparts; most conspicuous building is cathedral (1827–66); harbour, recently enlarged, is great port for herring and cod fishing. Early in the Great War Boulogne acquired importance, and on Sunday, Aug. 9, 1914, the first of the transports conveying the Brit. Expeditionary Force arrived in the harbour. The cavalry encamped at Ostro-hove, above the famous Villa Joséphine, and the infantry at Camp Malbrouck, round the Colonne de la Grande Armée, where in 1802 Napoleon had mustered an army for the invasion of England. When the

Allied forces failed to stem the German sweep through Northern France, Boulogne was for a short time given up as port of communication with England. Being unfortified, it was proclaimed an 'open town'; but the Germans never reached it, and when the fighting settled down to trench warfare, Boulogne became the chief base of supply for the Brit. forces. Indeed, it became almost entirely British, and was fitted out with hospitals, depots, repair works, and the organization of supplies now necessary to a great army in the field. The port was several times attacked by German aircraft. Pop. 53,000.

**Boulogne-sur-Seine**, suburb of Paris ( $48^{\circ} 50' N.$ ,  $2^{\circ} 14' E.$ ), with famous pleasure-ground, 'Bois de Boulogne.' Pop. 57,000.

**Boulton**, MATTHEW (1728–1809), Eng. engineer and inventor, was partner of James Watt; designed machinery for stamping coinage for the Mint.

**Bounce.** See SHARKS and DOGFISHES.

**Boundary.** In all grants and conveyances of land it is of the greatest importance that the extent of the property granted or conveyed should be accurately and precisely defined. Nowadays a plan is almost invariably annexed to the deed of conveyance, and the boundaries are described by reference to it. Old charters and other deeds were often vague, and the law has established certain presumptions regarding boundaries. Where a road or river separates two estates, the boundary line is presumed to run through the middle of same. Where a ditch

has been dug and a hedge planted on the earth thrown out, the boundary is presumed to be the edge of the ditch away from the hedge, the theory being that the owner dug the ditch on the extreme edge of his property and threw the earth backwards on to his own land.

**Bounds**, BEATING TIME, old custom of formally visiting the parish boundaries on Ascension Day; still survives in Scotland as 'Riding of the Marches' or 'Common Riding,' held annually at Hawick, Linlithgow, Peebles, and Selkirk; at Musselburgh once in twenty years.

**Bounty**, KING'S. (1) Impression becoming illegal (1660), king's bounty was for long paid for voluntary enlistment in army in time of war; (2) given to seamen for extraordinary services—*e.g.*, capturing pirate ships; (3) formerly granted as encouragement to certain branches of commerce; (4) bestowed on subjects who produce three or more children at a birth.

**Bounty**, QUEEN ANNE'S. After Reformation tenths and first-fruits were paid by Church to State, until formed into Clergy Fund by Anne (1704).

**Bounty**, MUTINY OF THE. The crew of H.M.S. *Bounty* mutinied near Tahiti (1784), setting adrift their overbearing commander, William Bligh, who, with those loyal to him, ultimately reached Batavia in safety. Many of the mutineers settled in Tahiti, some of whom were afterwards punished. Others founded colony on PITCAIRN ISLAND.

**Bourbaki**, CHARLES DENIS SAUTER (1816–97), Fr. soldier,

won distinction in Algeria, Crimea, and Ital. campaign of 1859. In Franco-German War (1870) commanded Imperial Guard in Bazaine's army. Managed to escape from Metz, and was given command of Army of East, whose duty was to relieve Belfort. Germans being reinforced, his army was cornered against Swiss frontier. He attempted suicide, was carried across border, and with army of 84,000 was interned in Switzerland. Later held several military posts.

**Bourbon, ISLE.** See RÉUNION.

**Bourbon, Fr. family,** figuring in history from 9th cent. In 1272, a younger son of Louis IX. of France obtained the lordship of Bourbon in Berry by marriage with the heiress; his son Louis was created Duke of Bourbon in 1327; the Constable of Bourbon (b. 1490) obtained fame in imperial service, and was slain during sack of Rome (1527). In the person of Henry IV. the Bourbons ascended the throne of France (1589), and the War of the Spanish Succession resulted in establishment of Bourbons on throne of Spain; for long Span. and Fr. 'Family Compacts' threatened balance of power.

The Bourbons fell in France (1791), and were expelled from their various Span. and Ital. possessions by Napoleon; restored 1815; younger Orleanist branch replaced elder in France (1830-48), when they were expelled; driven from Naples (1860), Spain (1868-74). The elder branch died out with the Comte de Chambord (1883), and the Orleanists again became sole hope of the French monarchists.

The present representative of the Bourbon-Orleans house is Louis Philippe Robert, Duke of Orleans (b. 1869).

**Bourbonne-les-Bains, tn.** and health resort, in Haute-Marne, France (47° 57' N., 5° 43' E.); hot mineral springs (122°-138° F.); 12th cent. church; trade in timber, plaster. Pop. 3,700.

**Bourboule, LA,** health resort, Puy-de-Dôme, France (45° 35' N., 2° 42' E.); hot springs with arsenical and radio-active waters (81°-129° F.). Pop. 1,900.

**Bourchier, ARTHUR** (1864- ), actor manager; probably the most versatile actor of the day, as witness his appearance in such differing characters as the broker's man in *Tilly of Bloomsbury*, and Iago; lessee of Garrick Theatre, and afterwards of the Strand; has adapted several Fr. plays for Eng. stage. Among his numerous successes were *The Arm of the Law*, *Henry VIII.*, *Stand and Deliver*, *The Better 'Ole*, etc.

**Bourchier, THOMAS** (?1404-86), Eng. ecclesiastic; Archbishop of Canterbury (1454), lord chancellor (1455), cardinal (1467). He crowned Edward IV., Richard III., and Henry VII.

**Bourdaloue, LOUIS** (1632-1704), Fr. Jesuit; famous as preacher at court of Louis XIV.; man of beautiful character and great oratorical power; much revered by all classes.

**Bourgas.** See BURGAS.

**Bourgelat, CLAUDE** (1712-79), French veterinary surgeon and pioneer of veterinary science in Europe; founder of a famous veterinary school at Alfort, near Paris, still probably the finest in the world.



**Bourg-en-Bresse**, cap. Ain, France (46° 12' N., 5° 13' E.); ry. jn.; church of Notre Dame de Brou (16th cent.); jewellery, copper ware, and pottery. Pop. (comm.) 20,500.

**Bourgeois**, LÉON VICTOR AUGUSTE (1851— ), Fr. statesman and eminent writer; is a veteran leader of Radical party, who has held office in eight cabinets: minister of interior (1890); of education and fine arts (1892); of justice (1892-3); prime minister (1895-6); minister of labour and social reform (1912-13); of labour (1917); president of Senate (1920). An accomplished orator, he would probably have become president of Republic but for his feeble health; is author of an epoch-making book, *La Solidarité*. He was appointed to represent France on Council of League of Nations (Oct. 1919).

**Bourgeoisie** (literally bur-gesses) is a Fr. expression generally used contemptuously of that section of the community whose ideals are a certain sordid comfort, petty ostentation, and a grotesque respectability.

**Bourges**, tn., cap. Cher, France (47° 5' N., 2° 24' E.); government arsenal and gun foundry; breweries, leather, cutlery; remains of Roman ramparts; 12th cent. cathedral; seventeen councils held here, most important in 1438, when freedom of Gallican Church was asserted; Charles VII.'s capital. Pop. 45,700.

**Bourget**, LAC DU, largest lake in France (45° 42' N., 5° 52' E.); 758 ft. above sea-level; connected with Rhone by Canal de Savières; abbey of Hautecombe (1125) on shore.

**Bourget**, LE, tn., outskirts of Paris (48° 56' N., 2° 27' E.); Prussians defeated French (1870).

**Bourget**, PAUL CHARLES JOSEPH (1852— ), Fr. novelist and critic, member of Fr. Academy; has produced a considerable number of novels in various styles, which have made his reputation as a master of psychological analysis, and are distinguished by an exquisite sense of form and expression. Many of these have been translated into English—e.g., *Un Crime d'Amour*, *Mensonges*, *Drames de Famille*, *Un Divorce*, etc. He also occupies a high position as a critic—e.g., *Etudes et Portraits*; while his descriptive powers are shown in *Sensations d'Italie*.

**Bourgoin**, tn., Isère, France (45° 36' N., 5° 13' E.); thriving industrial centre. Pop. 6,800.

**Bourinot**, SIR JOHN GEORGE (1837-1902), Canadian constitutional historian; founder and editor of *Halifax Herald*; chief clerk to Canadian House of Commons; author of *Canada under British Rule*, *Manual of Constitutional History of Canada*, etc.

**Bourke**, tn., New South Wales, Australia (30° 7' S., 145° 55' E.); copper ore; trade in tinned meat; irrigation works. Pop. 2,600.

**Bourlon Wood**. See CAMBRAI, BATTLE OF.

**Bourmont**, LOUIS AUGUSTE VICTOR, COMTE DE GHAISNES DE (1773-1846), marshal of France; served with army of *émigrés* (1792-3); subsequently became a general in imperial army; deserted Napoleon before the battle of Ligny; war minister (1829); commanded Algiers expedition (1830); refused oath

of allegiance to Louis Philippe, and retired to Portugal. Returned to France (1840) after general amnesty.

**Bourn**, or **BOURNE**, urban dist., par. and tn., Lincolnshire, England ( $52^{\circ} 47' \text{ N.}$ ,  $0^{\circ} 24' \text{ W.}$ ); ruined castle belonged to HERWARD THE WAKE. Acreage, 10,103; pop. 4,300.

**Bourne**, FRANCIS (1861– ), R.C. archbishop of Westminster, and head of R.C. Church in England; was appointed Bishop of Southwark (1897), and succeeded to present office on death of Cardinal Vaughan (1903); was made a cardinal (1911).

**Bourne**, HUGH (1772–1852), founder of English Primitive Methodists (1811) from Wesleyan Methodist Connexion. Before his death his followers numbered some 110,000.

**Bourne**, VINCENT (1695–1747), Eng. Latin poet; was a master at Westminster School; famous for the exquisite grace of his Latin poems, which have received high praise from Cowper, Lamb, and others.

**Bournemouth**, wat.-pl., English Channel, Hampshire, England ( $50^{\circ} 43' \text{ N.}$ ,  $1^{\circ} 53' \text{ W.}$ ); mild climate; beautiful scenery; pier over 1,200 ft. long. Pop. 78,700.

**Bournonite** ( $\text{CuPbSbS}_3$ ), mineral, sulphide of antimony, lead, and copper, steel-grey metallic lustre; found in Cornwall, Harz Mts., Mexico; used as lead ore.

**Bournville**, model vil., near Birmingham, England ( $52^{\circ} 26' \text{ N.}$ ,  $1^{\circ} 55' \text{ W.}$ ); site of Cadbury's chocolate works. See also under GARDEN CITY.

**Bourrée**, dance, said to be of Fr. or Span. origin; as a musical

form the *bourrée*, always in alla-breve time, is found in the works of the older composers, such as the *suites* of Bach.

**Bourrienne**, LOUIS ANTOINE FAUVELET DE (1769–1834), Fr. diplomatist; educated military school of Brienne with Napoleon, with whom renewed acquaintance in revolutionary Paris; was private secretary to Napoleon in Italian campaign (1798); Fr. envoy to Hamburg (1805–10), but was disgraced for bribery and corruption (1810); joined the Royalists (1814); is chiefly remembered for his *Mémoires*.

**Bourse**, continental name for a stock exchange or money market. The Paris Bourse is a handsome Grecian building, with Corinthian pillars designed by Alex. Théod. Brongniart (1813); completed by Labarre in 1827. See STOCK EXCHANGE.

**Bourses du Travail**, originally started in France (1887) as labour exchanges; supported by the public, but managed by trade unions; soon became the equivalent of our trade councils (local combinations of all unions), but with the important difference that they are open to all workmen whether organized or not.

**Boursse**, ESAIAS (1630–73), Dutch artist; was famous as a painter of interiors, and his works are scarce; finest known example, an interior, with a woman and child, is in the Wallace Collection, London.

**Bourtsev**, VLADIMIR, Russian revolutionary, exposed, first in Russia after revolution of 1905 and afterwards from Paris, the methods of *agents provocateurs* of Russian secret police; re-

turned to Russia from patriotic motives (Sept. 1914), but was arrested and condemned to Siberia on charge of *lèse majesté*, based on his Paris articles; was afterwards released, and after revolution of 1917 assisted the government in eradicating the autocratic police system.

**Bouscat**, LE, tn., Gironde, France (44° 52' N., 0° 37' W.); suburb of Bordeaux; has hydro-pathic. Pop. 11,300.

**Boussa**, tn., N. Nigeria, W. Africa (10° 22' N., 4° 28' E.); Mungo Park drowned in riv. Niger here (1806). Pop. 12,000.

**Boussingault**, JEAN BAPTISTE JOSEPH DIEUDONNÉ (1802-87), Fr. chemist; made important observations on plant physiology; author of *Economie Rurale*, etc.

**Boussu**, tn., Belgium (50° 26' N., 3° 47' E.), two m. S. of Condé-Mons Canal, from which Brit. 2nd Corps began retreat to the Marne (Aug. 23, 1914); recaptured by British, Nov. 1918; coal, iron, copper. Pop. 11,500.

**Boutell**, CHARLES (1812-77), Eng. archæologist; assisted in founding London and Middlesex Archæological Society; best known work is *Heraldry, Historical and Popular*.

**Bouterwek**, FRIEDRICH (1766-1828), Ger. philosopher; prof. of philosophy at Göttingen; at first was a follower of Kant, but later favoured the views of F. H. Jacobi; *Geschichte des neueren Poesie und Beredsamkeit* earned him a lasting reputation.

**Boutmy**, ÉMILE GASTON (1835-1906), Fr. writer on collective psychology; founded along with Taine the Free School of Political Sciences; wrote many books,

some dealing with England—e.g., *The English Constitution*, etc.

**Boutroux**, ÉMILE (1845- ), president of Académie des Sciences Morales et Politiques; ranks with Henri Bergson as most influential of Fr. philosophers; professor of history of modern philosophy and director of Institut Thiers; has lectured before Brit. Academy; author of *Contingence des Lois et de la Nature*, Pascal, William James.

**Bouts**, DIERICK (also called STUERBOUDT and THIERRY DE HAARLEM), Dutch artist (c. 1400-75); was municipal painter at Louvain, and painted many Biblical and historical pictures.

**Bouts-rimés** (Fr., 'rhymed ends'), verses made from selected rhyme-endings, a form of metrical exercise begun in France during the 17th cent. D. G. Rossetti, amongst Eng. writers, sometimes amused himself by writing sonnets to rhymes supplied by another.

**Boutwell**, GEORGE SEWALL (1818-1905), Amer. statesman; as a democratic representative in Congress (1863-9) was one of seven who conducted impeachment of President Johnson; secretary of treasury (1869-73); U.S. senator from Massachusetts (1873-7); was U.S. representative before commission for deciding Fr. and Amer. claims arising out of Civil War, Franco-German War, and the Commune; bitterly opposed acquisition of the Philippines by U.S., and (1900) became president of Anti-Imperialist League.

**Bouty**, EDMOND MARIE LEOPOLD (1846- ), Fr. scientist; prof. successively at Montauban,

Reims, St. Louis, and Fénelon; was appointed to Faculté des Sciences, Paris (1885); early experimenter on conductivity of metals at low temperatures.

**Bouvardia**, genus of small shrubby plants, family Rubiaceæ, including nearly fifty species, mostly Central American; cultivated in Brit. greenhouses for the sake of their long, tubular, usually red flowers.

**Bouvet**, FRANÇOIS JOSEPH (1753-1832), Fr. admiral; served in Fr. navy, becoming captain and rear-admiral (1793); dismissed for failure to land General Hoche in Ireland (Dec. 1796); restored to service by Napoleon.

**Bouvier**, JOHN (1787-1851), Amer. judge and legal writer; most important work is *The Institutes of American Law*.

**Bouvines**, vil., Nord, France (50° 34' N., 3° 12' E.); Philip Augustus of France defeated Otto IV. of Germany, who was an ally of King John of England, and was assisted at the battle by English troops (1214).

**Bovate**, or OXGANG, old Eng. measure of land varying in extent from 8 to 24 ac.; supposed to be as much as could be ploughed by an ox in a single year; eight bovates went to the hide or carucate; eight carucates made a knight's fee.

**Boves**, tn., prov. Cuneo, Italy (44° 20' N., 7° 32' E.); iron mines, marble. Pop. 10,000.

**Bovey Tracy Beds**, lacustrine sands, clays, and lignites (plant beds), 200-300 ft. thick, deposited in Lower Tertiary times in a lake basin between the Greensand hills near Newton Abbott and the Dartmoor granite; material de-

rived largely from decomposed granite; lignite or Bovey 'coal' used locally since 1714; recently considered as source of fuel oils and ammonia salts.

**Bovidæ**, family of hollow-horned ruminants now distributed throughout the world, but formerly not occurring in Central and S. America and Australia. It includes sheep, goats, cattle, antelopes, gazelles, etc.

**Bovill**, SIR WILLIAM (1814-73), Eng. judge, probably the greatest Eng. authority on commercial law; assisted in passing the Partnership Law Amendment Act, usually known as Bovill's Act; appointed solicitor-general (1866); presided as judge at first Tichborne trial.

**Bow**, anything curved or bowed; formerly name used for arch, whence is derived Bow Church. Weapon used to shoot arrows (see ARCHERY). Violins and similar instruments are played with bows consisting of a stick of Pernambuco wood, c. 29 in. long, strung with horsehair.

**Bowden**, suburb of Adelaide, S. Australia (35° S., 138° 34' E.); one of several contiguous manufacturing townships. Pop. 2,600.

**Bowdich**, THOMAS EDWARD (1790-1824), Eng. author; spent some years on the Gold Coast, during which time he went on a mission to Kumasi and arranged treaty by which British company obtained control of natives of the coast. His criticism of administration of Gold Coast led Brit. Government to take over control of colony. Pub. *Mission from Cape Coast Castle to Ashantee* (1819), and other works.

**Bowditch**, HENRY INGERSOLL (1808-92), Amer. physician; prof.

of clinical medicine, Harvard; was an authority on diseases of lungs, and first to puncture chest cavity in case of pleural effusion.

**Bowditch**, NATHANIEL (1773-1838), American mathematician, chiefly known for his commentary on and translation of Laplace's *Mécanique Céleste* (1829-38).

**Bowdler**, THOMAS (1754-1825), Eng. ed. and philanthropist; was an M.D. of private fortune, who became notorious as the ed. of *The Family Shakespeare* (1818), in ten vols., in which all words and expressions were omitted which might offend the prudish sense. From his name is derived the phrase 'to bowdlerize'; though execrated by many, his work has been praised by Swinburne.

**Bowdoin**, JAMES (1726-90), Amer. separatist in War of Independence; was one of the founders and first president of American Academy of Arts and Sciences. His son, JAMES BOWDOIN (1752-1811), politician and diplomatist, was generous benefactor of Bowdoin Coll. (named in honour of father).

**Bowell**, HON. SIR MACKENZIE (1823-1917), Canadian statesman; was proprietor and ed. of *Intelligencer*, and successively minister of customs, of defence, and of trade and commerce; became prime minister in succession to Sir John Thompson (1896), but was defeated and resigned in same year; was leader of Conservative opposition, and afterwards became an Independent.

**Bowels**. See DIGESTION.

**Bowen**, CHARLES SYNGE CHRISTOPHER BOWEN (1835-94), life baron (1893); Eng. judge, distinguished in Tichborne case,

etc.; made lord of appeal in ordinary (1893); was great lawyer, but more brilliant wit; trans. *Eclogues* and part of *Æneid* of Virgil; wrote legal studies.

**Bowen**, FRANCIS (1811-90), Amer. philosophic writer; lecturer on political economy and philosophy, and later (1854) prof. of natural religion at Harvard; ed. *N. American Review* (1843-54); besides biographies of public men, he wrote *A Treatise on Logic* (1864), *American Political Economy* (1870), and numerous other works.

**Bowen**, SIR GEORGE FERGUSON (1821-99), Brit. colonial statesman; was governor successively of Queensland, New Zealand, Victoria, Mauritius, and Hong-Kong; did much to reconcile Maoris to Brit. rule.

**Bowen**, RICHARD (1761-97), Brit. naval officer, the greatest of whose many gallant feats was his single-handed capture of the huge Span. four-decker *Santisima Trinidad* after the battle off Cape St. Vincent (1797); shot in ill-starred attack on Santa Cruz.

**Bowerbank**, JAMES SCOTT (1797-1877), Eng. naturalist and geologist; leading founder of Palæontographical Soc. (1847); chief work, *Monograph of the British Spongiadae*.

**Bower-bird**, name given to several species of Australian sub-family Ptilonorhynchinae, a division of family which includes bird of paradise; receive their name from their habit of constructing bowers, runs, huts, etc., which they ornament with bright-coloured flowers, rags, shells, etc., with an apparent sense of colour and design seemingly far beyond powers of instinct.

**Bowfins** (*Amiidae*), only living representative the bowfin or grindle, *Amia calva*, a mottled green ganoid fish approaching the herring family in characters, found in the fresh waters of the eastern U.S.; an excellent sporting fish, but seldom used as food. Fossil species occur from the Eocene onwards.

**Bowie-knife**, hunting weapon named from its inventor, Colonel James Bowie (1790–1836); double blade about 12 in. long, curved.

**Bow-legs**, bending of the femur or tibia or both with convexity outwards, usually occurring in rickety children; may be corrected in childhood by wearing of splints at night.

**Bowles**, CAROLINE. See SOUTHEY.

**Bowles**, SAMUEL (1826–78), Amer. journalist; was ed. of the *Springfield Republican* (founded by his father, Samuel Bowles, in 1824), which under his control became one of the most influential dailies in America; was also author of a travel-book, *Our New West* (1869).

**Bowles**, THOMAS GIBSON (1844–), Eng. politician and author; was Conservative M.P. for King's Lynn (1892–1906), and afterwards Liberal M.P. for that constituency and for South Leicester (1910 and 1916); an authority on maritime law, he has written *Sea Law and Sea Power*, *Maritime Warfare*, etc.

**Bowles**, WILLIAM LISLE (1762–1850), Eng. poet and antiquary; canon, Salisbury Cathedral; pub. *Fourteen Sonnets on Picturesque Spots* (1789), which greatly influenced Coleridge and Wordsworth, and prepared the way for

the revolt against the pseudo-class. school of poetry of the 18th cent. His strictures on the class. theory of verse involved him in a long controversy.

**Bowling Green**. (1) City, Kentucky, U.S. (37° N., 86° 29' W.); important horse and cattle market. Pop. 9,200. (2) City, Ohio, U.S. (41° 22' N., 83° 40' W.); oils and natural gas. Pop. 5,200.

**Bowls**, with the exception of archery, the oldest surviving Eng. game. It was played as early as the 13th cent.; the first mention of the game by the name of 'bowls' occurs in Acts of Henry VIII.'s time; and during the Elizabethan age 'bowling alleys' were to be found throughout the country. Henry VIII. enjoyed a game; Sir Francis Drake was playing at bowls when news reached him of the coming of the Armada; the Stewart kings were followers of the game, Charles I. especially, who is said to have beguiled with it his captivity at Holmby and Carisbrooke. The Puritans regarded the pastime with no friendly eye, but with the Restoration it again came into favour, since which time it has continued to flourish, and was never more popular than it is at the present day.

The game is played upon either a flat sunk green (40 or more yds. sq.) or a 'crown' green (i.e., one which is formed with a gentle rise towards the centre). As a rule, there are two players on each of two sides, using lignum vitæ bowls, which receive a bias from the wood-turner, in place of loading, which used to be the method. It will thus be seen that in playing upon a 'crown' green, with

biased bowls, considerable skill is required in placing the 'woods' to advantage. The game is played by the 'leader' of one side throwing the 'jack,' after which the players deliver their bowls in turn, and attempt to place them as near to the jack as possible. The bowls are thrown with the foot placed on a 'footer,' or india-rubber mat, used for the purpose of preserving the green. The 'leader,' already mentioned, having played his bowl, gives place to the 'second,' who is also the scorer of the game; then to the third, who is also the 'measurer'—i.e., the person who measures, if necessary, the distances between the bowls and the jack; finally, to the fourth player, who is also called the 'skip' and 'captain,' necessarily a player of resource, for often upon him depends the success of the game. When all the bowls have been played a point is reckoned for each bowl of one side which lies nearer the jack than the corresponding bowl of the other side.

Alwin, *The Gentle Art of Bowling* (1904); Manson, *The Bowlers' Handbook* (1906).

**Bowman**, SIR WILLIAM (1816-92), Eng. ophthalmic surgeon; prof. of physiology and anat. at King's Coll., and resident surgeon at Royal Ophthalmic Hospital, London; was the first Eng. expert in use of ophthalmoscope, and a founder of St. John's House for the training of nurses.

**Bowness** - on - Windermere, par., Westmorland, England (54° 22' N., 2° 25' W.); tourist centre; pier for lake steamers. Pop. 2,900.

**Bowral**, tn., Camden, New South Wales (34° 29' S., 150° 27' E.); dairying, fruit. Pop. 1,800.

**Bowring**, SIR JOHN (1792-1872), Eng. linguist (knew 100 languages); first ed. of *Westminster Review* (1824); entered Parliament (1841), and was strong opponent of Corn Laws; governor of Hong-Kong (1854); ordered much criticized bombardment of Canton (1856).

**Bowstring Hemp**, fibre obtained from elongated succulent leaves of various species of *Sansevieria*, especially *S. zeylanica*, natives mostly of Africa, belonging to lily family; used for making ropes and coarse cloth.

**Bow Window**. See under BAY WINDOW.

**Bowyer**, SIR GEORGE (1811-83), Eng. jurist and Catholic controversial writer; was M.P. for Dundalk, and afterwards as a Home Ruler for Wexford; author of *English Constitution*, etc.

**Bowyer**, WILLIAM GEORGE (1699-1777), the learned printer; was printer to the House of Commons, the Soc. of Antiquaries, and the Royal Soc.; author of *The Origin of Printing*, etc.

**Box** (*Buxus sempervirens*), the common box tree; belongs to the order Euphorbiaceæ, is a native of S. Europe, and is found in parts of Asia and Africa. In warm countries it reaches a considerable height. The wood is hard, close, and heavy, of a pale yellow colour, and much used in the manufacture of flutes and similar musical instruments. A dwarf variety is used for garden borders.

**Boxall**, SIR WILLIAM (1800-79), Eng. portrait and historical painter; director of National Gallery, London (1865-74); pictures include portrait of Prince Consort, *Jupiter and Latona*, etc.

**Box-days**, days during recesses of Scot. law terms when pleadings, etc., may be lodged; named from receptacles introduced (1690) to obviate contact between client and judge.

**Boxers**, THE, Chinese secret society which produced the great anti-foreign rising of 1900, culminating in capture of Peking by allied European and Japanese forces. See CHINA (*History*).

**Boxhagen-Rummelsburg**, tn., Brandenburg, Prussia (52° 27' N., 13° 37' E.); woollen and plush goods. Pop. 20,000.

**Box-hauling**, term used in navigation to describe method of avoiding long sweep when changing tack of ship's course; vessel is veered sharp by bracing head-yards flat aback and squaring after-yards.

**Boxing**, the art of fighting with the fists, now generally with the hands protected by padded gloves. Although the anc. Greeks and Romans had boxing contests with strict rules regarding them, the development of modern boxing, which has been almost entirely confined to England, the Brit. colonies, and U.S., dates from the beginning of the 18th cent., becoming a popular and fashionable sport about 1735-50, when Jack Broughton, the inventor of boxing-gloves, flourished. The Augustan age of boxing was during the first two decades of the 19th century—the times of Mendoza, Belcher, 'Gentleman' Jackson, Gully, Tom Cribb, Dutch Sam, and Tom Spring.

A revival took place about 1850-60, when Heenan, King, Tom Sayers, and Jem Mace were in the ring. The public outcry after the great fight between

Heenan and Sayers caused prize fighting to be declared illegal in England. In 1866 the Amateur Athletic Club was founded, and the rules on which the modern sport is based were drawn up mainly by the 8th Marquess of Queensberry. Since 1890 considerable public interest has been taken in professional contests, Peter Jackson the negro, Sharkey, Pedlar Palmer, John L. Sullivan, Kid M'Coy, Dick Burge, Bob Fitzsimmons, Jim Corbett, James J. Jefferies, Tommy Burns, Jack Johnson the negro, Jack Dempsey, Jesse Willard, Georges Carpentier, Joe Beckett, and Bombardier Wells all being well-known names.

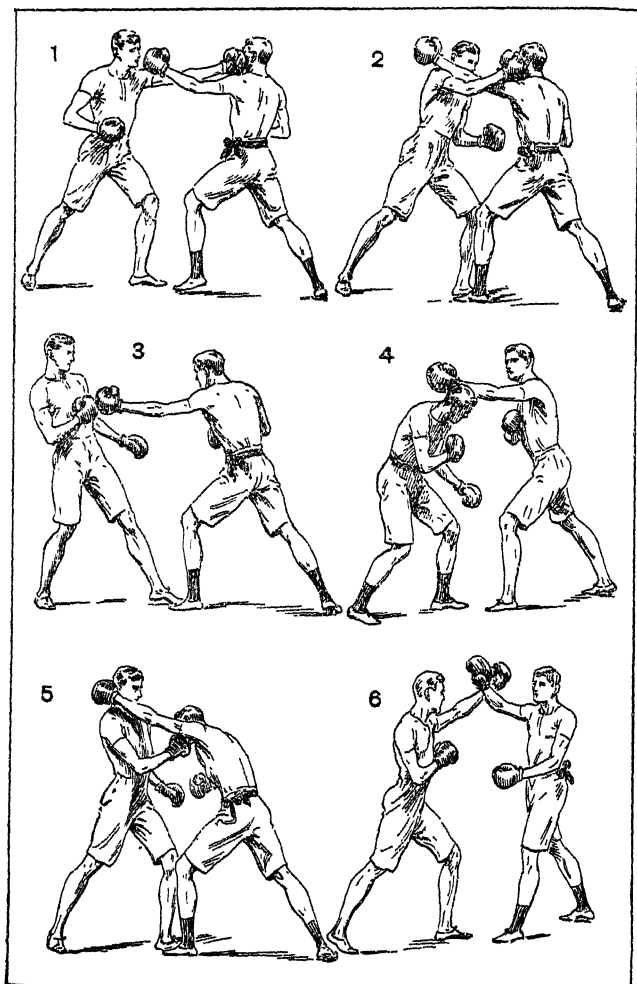
The financial aspect of modern boxing came into prominence in 1908, when £26,000 was drawn in the fight between Jack Johnson and Tommy Burns at Sydney. Similar large sums have changed hands as a result of fights in America since that date. The Great War, while preventing some big meetings, in no way retarded the popularity of the sport. In America the revival of the boom saw the meeting of Dempsey and Willard in July 1919, and of Carpentier and Beckett in London in December of the same year.

Dowling, *Fistiana* (1864); Henning, *Fights for the Championship* (2 vols. 1902); Fred. G. Shaw, *The Science of Self-Defence* (1919); H. Furniss, *Byways and Queer Ways of Boxing* (1919).

**Boxing Day**, Eng. bank holiday, is the day after Christmas Day, on which Christmas boxes are usually given to employees.

**Boxthorn**, English name for Solanaceous genus *Lycium*, com-





*Boxing : Postures in Attack and Defence.*

1. Counter. 2. Cross counter. 3. Draw back. 4. Duck. 5. Right upper cut. 6. Parry.

prising over seventy species of shrubs; are natives of temperate regions; some varieties used for hedges, others as wall plants.

**Boyaca**, or **BOJACA**, tn. and dep., Colombia, S. America (5° 15' N., 73° 10' W.); has richest emerald mine in world; tn. was scene of Bolivar's victory over Spaniards (Aug. 7, 1819). Area, 16,460 sq. m.; pop. (dep.) 586,500; (tn.) 7,000.

**Boyar** (Russ. *boyárin*, 'lord'), name given to the members of privileged rank of old Russian aristocracy next in dignity to princes; became honorary under Peter the Great. Now applied to the Conservative party in the Rumanian Parliament.

**Boy Bishops** were elected in Middle Ages by cathedral chorister boys on St. Nicholas's Day (Dec. 6); held office till Dec. 28.

**Boyce**, **WILLIAM** (1710-79), Eng. composer; son of a cabinet-maker; became master of the king's band, and organist of the Chapel Royal; celebrated for his church services and anthems—e.g., *By the Waters of Babylon*; pub. a valuable work on *Cathedral Music* (1760; new ed., with additions, 1849).

**Boycotting**, system adopted under the 'Land League' in Ireland to prevent any person from taking or working a farm or building from which a tenant has been evicted for the non-payment of rent. Labourers were forbidden to work for the 'land-grabber,' tradesmen refused to deal with him, and in many cases cattle were maimed, crops destroyed, and personal assaults committed. The first victim was CAPTAIN **BOYCOTT** (1832-97), agent for

Lord Erne, with whom the Conemara inhabitants refused to have any dealings, because of the evictions for which he was responsible. His life was threatened, his property damaged, and he experienced many other troubles. The severe measures adopted by the government (1887) gave the death-blow to this system of 'exclusive dealing.'

**Boyd**, **ANDREW KENNEDY HUTCHISON** (1825-99), Scot. divine, commonly referred to as A.K.H.B.; author of *Recreations of a Country Parson*, and other works abounding in entertaining anecdotes and clever sketches of well-observed character.

**Boyd**, **SIR JOHN ALEXANDEE** (1837-1916), Canadian jurist; chancellor and afterwards president of High Court of Justice for Ontario; has acted as arbitrator for Dominion Government, for Ontario, and for the C.P.R.; served on many royal commissions.

**Boyd**, **ZACHARY** (?1585-1653), Scot. Puritan theologian, was twice Lord Rector of Glasgow Univ., and preached against Cromwell during his occupation of city (1650); author of *Zion's Flowers*, a metrical version of the Scriptures known as *Boyd's Bible*.

**Boyd-Carpenter**, **WILLIAM** (1841-1918), theologian, Bishop of Ripon, and afterwards sub-dean and canon of Westminster; as a preacher had few rivals in Church of England; was Hulsean lecturer (1878), and wrote several books, notably on eugenics and on the causes of decline in the birth-rate.

**Boydell**, **JOHN** (1719-1804), Eng. engraver and publisher, famous for his illustrated ed. of

Shakespeare's works; was Lord Mayor of London (1790).

**Boyden, SETH** (1785-1870), Amer. inventor; invented a machine for splitting leather, introduced manufacture of patent leather into America, and discovered the process of making malleable cast iron; also made several improvements in the machinery of locomotives.

**Boy-Ed, CAPTAIN KARL** (1873- ), notorious Ger. agent provocateur; was closely associated with Admiral von Tirpitz, and did much to support his naval policy. On outbreak of war was appointed naval attaché at Washington, and abused his position by acting as chief of Ger. secret service in U.S.; was identified with plans for procuring bogus passports for Ger. reservists, for releasing interned liners, for invasion of Canada, and for blowing up of munition factories, etc. His nefarious activities made the U.S. demand his recall (Dec. 1915). He was afterwards decorated by the Kaiser.

**Boyer, JEAN PIERRE** (1776-1850), a mulatto; was president of republic of Haiti (1818-43); ruled with judicious firmness, but was forced to flee the country.

**Boyesen, HJALMAR HJORTH** (1848-95), literary historian and critic; was successively prof. of German at Cornell Univ. and Columbia Univ., New York; did good work in interpretation of Ger. and Scandinavian literature to Eng.-speaking peoples; author of *Goethe and Schiller*, commentary on the *Works of Ibsen*, etc.

**Boyle, mrkt. tn., co. Ros-** common, Ireland (53° 58' N., 8° 18' W.). Pop. 2,700.

**Boyle, HON. ROBERT** (1626-91), Eng. natural philosopher; seventh son of Richard Boyle, Earl of Cork; studied natural sciences, particularly physics, and made important inventions and researches in pneumatics (*Boyle's law*); he was a founder of the Royal Soc., an East India Co. director, and instituted 'Boyle Lectures' for defence of Christian religion. Works include *Seraphic Love*, *Hydrostatical Paradoxes*, *Experiments touching Colour*.

**Boylesve, RENÉ** (1867- ), Fr. novelist of regionalist school; depicts the bourgeois life of Touraine with subtle instinct and delicate irony. In his novels he has done for Touraine what Barrès has done for Lorraine, Bazin for Limousin, and Bordeaux for Savoie. Among his works are *Le Médecin des Dames de Néans*, *Mlle. Cloque*, *La Becquée*, *L'Enfant à la Balustrade*, etc., some of which have been trans. into English. He is a member of Fr. Academy.

**Boyne, riv., Ireland** (53° 43' N., 6° 16' W.); enters Irish Sea below Drogheda; length, 70 m. About 3 m. from Drogheda an obelisk marks the spot where the battle of the Boyne was fought (July 1, 1690), in which William of Orange defeated James II.

**Boyneburg, KONRAD VON** (1494-1567), famous leader of *landsknechte*; commanded imperial army which sacked Rome (1527); served against Turks (1532) and French (1544); assisted in capture of Vitry, Meaux, and St. Quentin (1557).

**Boys' Brigade, THE**, was founded in 1883 by Mr. (afterwards Sir) W. A. Smith of

Glasgow, with the following object: 'The advancement of Christ's kingdom among boys, and the promotion of obedience, reverence, discipline, self-respect, and all that tends to a true Christian manliness.' The brigade seeks to secure this object through the agency of military drill and discipline. The movement spread rapidly, and in 1920 there was a roll of 120,000 in all ranks. About 40,000 past and present members served during Great War, and the brigade also rendered valuable service in various war-relief schemes.

**Boy Scout Movement, THE**, was inaugurated by Lieut.-General Sir Robert Baden-Powell (1908), with the object of developing manliness, self-respect, and self-reliance among boys of all classes, by means of practices and games—such as signalling, tracking, and stalking, camping out, and observing nature. The movement is now practically world-wide, and there are over 300,000 members in Great Britain alone. Over 100,000 ex-scouts served during Great War, and in its early stages took charge of telephonic, telegraphic, and railway communications pending arrival of troops to guard them. Throughout the war the Sea Scouts, under the direction of the Admiralty, performed the duty of coast watching with marked success. The *Girl Guides* movement aims at developing home-craft and mother-craft among the rising generation of women. Like the Boy Scout movement, it has spread rapidly, and has stood the test of the war with very satisfactory results.

**Boys' Life Brigade** was founded by Rev. John Brown Paton, D.D., of Nottingham, and has aims similar to those of the Boys' Brigade. It was originated in deference to those who objected to familiarizing boys with the use of firearms, to which Dr. Paton himself did not object.

**Boz.** See DICKENS, CHARLES.

**Bozdech**, EMMANUEL (1871–89), Czech dramatist, most typical representative of Scribe school in Bohemia: some of plays are still acted—e.g., *The World's Lord at Home*, and *Baron Goertz*.

**Bozen**, or BOTZEN, tn., Trentino, Italy (46° 30' N., 11° 21' E.); commercial centre on Brenner Ry. Pop. 23,800.

**Bozrah**, name of several places in anc. Palestine, now in ruins. Most famous were (1) cap. of Edomites, probably modern El Busseireh, 25 m. S.S.E. of Dead Sea (30° 52' N., 35° 26' E.); (2) in Hauran (32° 30' N., 36° 27' E.), Roman frontier city.

**Bozzaris**, MARCOS (1788–1823), Gr. hero of War of Independence; fell in sortie from Missolonghi.

**B. Ph.**, Bachelor of Philosophy.

**Bra**, tn., Cuneo, Italy (44° 42' N., 7° 52' E.); silk and wine trade. Pop. 16,000.

**Brabançonne**, LA, the Belgian national anthem; inspired by revolution of 1830; words were by Dechet (Jénneval), music by François van Campenhout.

**Brabant**, mediæval duchy of Low Countries, corresponding to modern prov. of North or Dutch Brabant and the Belgian provs. of South Brabant (inhabitants mostly Walloons) and Antwerp (inhabitants chiefly Flemings); separated from Lorraine,

11th cent.; Limburg attached (1288); united to Burgundy (1430); became part of Span. monarchy (1516); afterwards formed part of kingdom of Holland; since 1830 three provinces as mentioned above.

**Brabant, NORTH**, prov., southern Holland (51° 32' N., 5° E.); surface flat; heathy and marshy tracts; agriculture and cattle rearing; inhabitants mostly R.C.; chief tn., s'Hertogenbosch. Area, 1,980 sq. m.; pop. 715,000.

**Brabant, SOUTH**, prov., Belgium (50° 45' N., 4° 30' E.), between Meuse and Scheldt; industrial and agricultural; thickly populated; cap. Brussels. Area, 1,268 sq. m.; pop. 1,470,000.

**Brabant, SIR EDWARD YEWD** (1839-1914), S. African soldier, served against Basutos, and during S. African War (1899-1902) raised a large body of irregular horse which did excellent service; was commandant-general of Cape forces (1902-4).

**Brabeium**, or **BRABYLA** (also called African Almond, Kaffir, or Wild Chestnut), genus of one species of small trees of family Proteaceae, native in S. Africa; seeds are roasted and eaten, and used as substitute for coffee.

**Bracciano**. (1) Town, Rome, Italy (42° 7' N., 12° 10' E.); restored castle of Orsini family a typical mediæval fortress. Pop. 4,000. (2) Lake, on which above is situated; drained by Arrone riv.; area, 22 sq. m.

**Braccio**, or **FORTEBRACCIO**. See MONTONE, ANDREA DA.

**Brace**, **CHARLES LORING** (1826-90), Amer. philanthropist and author; founded New York Children's Aid Society and other

organizations; author of *Races of the Old World*, *The Dangerous Classes of New York*, etc.

**Brace**, **RT. HON. WILLIAM** (1865- ), politician; is president of S. Wales Miners' Federation; was Labour M.P. for S. Glamorgan from 1906 to 1918, and in that year was returned unopposed for Abertillery div. of Monmouthshire; was parl. under-secretary of state in Home Dep. (1915-18); is ardent advocate of nationalization of mines.

**Bracegirdle**, **ANNE** (?1663-1748), Eng. actress; acted with Betterton; chiefly remembered in connection with Congreve's comedies; superseded in public favour by Mrs. Oldfield, and retired (1707); buried in Westminster cloisters.

**Bracelet**, article of adornment, worn on the arm, and dating back to prehistoric times. The earliest kinds were either spirals, in the form of snakes, or artistically finished hoops, with highly decorated terminals. In ancient times men as well as women wore bracelets, but since about end of 12th cent. practice has been chiefly confined to women. In later times bracelets with chased and jewelled panels came into favour, and more recently the watch bracelet has become fashionable for both sexes.

**Brachelli**, **HUGO FRANZ, CAVALLIER VON** (1834- ), Austrian statistician, chief of statistical department of Austrian Board of Trade, and aulic councillor; wrote numerous statistical works.

**Brachial Artery**, the artery which carries blood to the arm; it is a prolongation of the axillary artery.

**Brachial Plexus**, a network of nerves formed by the lower four cervical nerves and part of the first dorsal.

**Brachinus**. See CARABIDEA.

**Brachiopoda**, class of invertebrate marine animals with bivalve shells, ranging in size between a quarter of an inch to 4 in., while certain species (e.g., *Productus giganteus*) attain a length and breadth of almost 1 foot. They are of great interest and importance, partly owing to the great number of species (over 4,000), most of which are fossil, and form valuable indications of the age of the strata to which they belong, and partly due to the uncertainty of their systematic position in the animal world. It has been variously held that the Brachiopoda show affinities with the Mollusca, Annelida, and Tunicata, but they may be regarded as allied to the Polyzoa, offshoots from the heterogeneous group called 'worms.'

One of the characteristic features is the beautifully shaped and tinted shell, which resembles lamellibranchiate bivalves only to a limited extent, and consists of a 'dorsal' and 'ventral' valve, the latter generally being the larger of the two. The valves are lined and secreted by the 'mantle,' and are opened and closed by a frequently extremely complex set of muscles, the interlocking being strengthened by teeth and sockets on the valves. The Brachiopoda possess a pair of brachial organs which are fleshy, generally spirally coiled, appendages, prolongations of the margins of the mouth. These labial appendages are, in one of

the two groups into which the class may be divided, supported by a calcareous skeleton, serve in respiration, and are always fringed with long cirri, for waiting minute food particles to the mouth. *Singula*, *Terebratula*, *Spirifer*, and *Productus* are typical and important genera.

Brachiopods flourished from the Cambrian to the Carboniferous era, then decreased in numbers during the Permian and Triassic periods, and again became comparatively abundant in the Jurassic and Cretaceous seas. There are about 100 species existing at the present time.

**Brachystegia**, genus of leguminous trees of tropical Africa; fibrous bark of many species used for making coarse cloth, bags, and ropes; inner bark of some species makes good paper pulp.

**Bracken**, or COMMON BRAKE (*Pteris aquilina*); the commonest of Brit. ferns, and one of about 100 species of family Polypodiaceæ.

**Brackenbury**, CHARLES BOOTH (1831-1900), British soldier; authority on weapons and tactics; wrote many works and papers on military affairs.

**Brackenbury**, SIR HENRY (1837-1914), Eng. soldier; served in Indian Mutiny, Ashanti, Zulu War (chief of staff), Nile campaign; director-general of ordnance (1899-1904); wrote several books on military matters.

**Bracklesham Beds** are fossiliferous greensands and clays of the Middle Eocene in Hampshire basin, well exposed on foreshore w. of Selsey Bill.

**Brackley**, mrkt. tn., Northamptonshire, England (52° 2' N., 1° 8' W.); brewing. Pop. 2,600.

**Brackwe-de-Brock**, tn., Westphalia, Prussia (51° 59' N., 8° 31' E.); 'Kolonie Bethel,' in vicinity, for epileptics. Pop. 10,500.

**Bract**, botanical term for a leaf (usually modified in shape and often smaller than the ordinary leaves of the plant) which bears in its axil a flower; a bract may be large and conspicuous, as in the arum; usually it is inconspicuous, but is always associated with a flower.

**Bracton**, HENRY DE (d. c. 1268), Eng. judge and priest; archdeacon of Barnstaple and chancellor of Exeter Cathedral (1264); wrote treatise on laws and customs of England.

**Bradasdorp**, tn., Cape Colony, S. Africa (34° 33' S., 20° 4' E.); wool, corn, coastal fisheries, oyster beds. Pop. c. 1,300.

**Braddock**, bor., Pennsylvania, U.S. (40° 26' N., 79° 49' W.); iron and steel manufactures; scene of General Braddock's defeat (1755). Pop. 19,300.

**Braddock**, EDWARD (1695-1755), Brit. general; commanded the forces operating against the French on the Ohio; was ambushed during attempt, with Washington, to capture Fort Duquesne. Nearly half his troops fell, and he received mortal wound.

**Braddon**, MARY ELIZABETH (1837-1915), Eng. novelist; began writing early, and made her name with *Lady Audley's Secret* (1862); was a prolific writer, and her novels were very popular. She married the publisher, John Maxwell, and her son is the novelist W. B. Maxwell.

**Bradford**, city, munic. co., bishop's see (1919), W. Riding, Yorkshire, England (53° 48' N.,

1° 45' W.); chief seat of woollen and worsted manufacture; important wool market; silks and velvets also made; first mill built (1798), now over 300; St. Peter's Church (1485); handsome public buildings; fine parks and statues; good railway communication; connected with Humber and Liverpool by canal; coal and iron mines, stone quarries in vicinity; engineering; besieged (1642, 1643); returns four members to Parliament. Pop. 288,500.

**Bradford**, city, Pennsylvania, U.S. (41° 59' N., 78° 44' W.); oilwells, machinery. Pop. 14,500.

**Bradford**, SIR EDWARD RIDLEY COLBORNE (1836-1911), an Anglo-Ind. soldier; distinguished himself during the Ind. Mutiny; was afterwards secretary in political and secret department of the India Office; metropolitan commissioner of police (1890-1903).

**Bradford**, JOHN (1510-55), English Prot. martyr; converted to Protestantism by Latimer; chaplain to Edward VI. (1553). During Mary's reign he was committed to the Tower, tried for heresy, and burnt at Smithfield.

**Bradford**, WILLIAM (1590-1657), a leader of Pilgrim Fathers, born at Husterfield, Yorkshire; joined the Separatists; sailed in *Mayflower* (1620); elected governor of Plymouth colony (1621).

**Bradford Clay**, a blue clay occurring at Bradford, near Bath, England; contains many fossils, including crinoids.

**Bradford-on-Avon**, par., mrkt. tn., Wiltshire, England (51° 21' N., 2° 15' W.); rubber industries and bathstone quarries; famous for woollens; Saxon church (8th cent.). Pop. 4,500.

**Brading**, par. and tn., Isle of Wight, England (50° 31' N., 1° 9' W.); Roman remains; large area reclaimed from sea. Pop. 1,563; acreage, 5,524.

**Bradlaugh**, CHARLES (1833-91), began life as a coal agent, then enlisted as a soldier, and eventually was employed in a solicitor's office. In 1858 he began his platform campaign as a Radical and freethinker. He was nominated one of the Paris candidates for the republican Parliament, but was sent back to England, where he stood for Northampton, and was eventually returned as its member. He refused to take the oath in Parliament, was excluded twice, each time being re-elected, and finally was permitted to take his seat. By his efforts the Affirmation Bill was passed.

**Bradley**, ANDREW CECIL (1851- ), Eng. critic; prof. of Eng. literature, Glasgow Univ. (1889-1900), and prof. of poetry at Oxford (1901-6); is author of *Shakespearean Tragedy* (1904) and *Oxford Lectures on Poetry* (1909).

**Bradley**, GEORGE GRANVILLE (1821-1903), Eng. divine and schoolmaster; head master of Marlborough; master of Univ. Coll. (1870); Dean of Westminster (1881-1902); he revised *Arnold's Introduction to Latin Prose Composition*; wrote *Aids to Latin Prose Composition*; *Recollections of Arthur Penrhyn Stanley*.

**Bradley**, HENRY (1845- ), Eng. philologist; senior editor of Oxford Eng. Dictionary since 1915; editor of early texts and author of *The Making of English*.

**Bradley**, JAMES (1693-1762), Eng. astronomer, discoverer of

'aberration of light'; Savilian prof. of astron., Oxford (1721); lecturer on experimental philosophy (1729); as Astronomer-Royal (1742), at Greenwich Observatory, carried out important improvements. He laid the foundations of modern astronomy.

**Bradshaw**, GEORGE (1801-53), Eng. printer and publisher; originator of railway guides; began issue of *Bradshaw's Railway Time-Tables* in 1839.

**Bradshaw**, HENRY (1831-86), Eng. scholar, antiquary, and librarian; fellow of King's Coll., Cambridge; dean (1857-65); univ. librarian (1867); made a special study of Celtic and other mss. Prothero, *Memoirs* (1888).

**Bradshaw**, JOHN (1602-59), Eng. judge and regicide; called to bar (1627), becoming a bencher (1647); presided over 'High Court of Justice' which tried Charles I.; president of council of state (1649); commissioner of great seal (1658); a zealous republican; body disinterred at Restoration and gibbeted.

**Brady**, NICHOLAS (1659-1726), Irish divine; chaplain to William III., Queen Mary, and Queen Anne; wrote, with Tate, metrical version of Psalms (1696), a tragedy, *The Rape*, and a trans. of the *Aeneid*.

**Bradypus**. See SLOTH.

**Braemar**, par., vil., Aberdeenshire, Scotland (57° N., 3° 23' W.); health resort; bracing climate; Ben Macdhui near by; alt. 1,100 ft. Pop. 500.

**Braf**, ALBIN (1851-1912), Czech politician and economist; emancipated Czech banking from German and Austrian capital; author of several works.



**Brag**, old card game, in which five or more players take part, an ordinary pack being used; the players 'brag' or stake their hands against one another.

**Braga**. (1) Dist., Portugal; largely pastoral. Area, 1,040 sq. m.; pop. 382,500. (2) Archiepisc. see, cap. of above ( $41^{\circ} 34' \text{ N.}, 8^{\circ} 28' \text{ W.}$ ); Gothic cathedral; Roman remains; cutlery, fire-arms. Pop. 24,650.

**Braga**, THEOPHILO (1843– ), Port. statesman and author; provisional president of new republic (Oct. 1910–Aug. 1911); chief work, *Historia da Literatura Portuguesa* (20 vols. 1860–80).

**Bragança**. (1) Seapt. tn., Para, Brazil ( $1^{\circ} \text{ S.}, 46^{\circ} 47' \text{ W.}$ ); agricultural centre. Pop. 18,000. (2) Tn., São Paulo, Brazil ( $22^{\circ} 59' \text{ S.}, 46^{\circ} 32' \text{ W.}$ ); stock rearing; sugar. Pop. 10,000.

**Bragança**, or BRAGANZA. (1) District, Portugal; agriculture; rearing of silkworms; silk manufactures. Area, 2,513 sq. m.; pop. 192,000. (2) City, episc. see, cap. of above ( $41^{\circ} 50' \text{ N.}, 6^{\circ} 48' \text{ W.}$ ); silk; castle gave name to ducal family which later ruled both Portugal and Brazil. Pop. 5,500.

**Bragg**, BRAXTON (1817–76), Amer. Confederate general and engineer; commanded Confederate troops in Louisiana at outbreak of Civil War; appointed to command of Western Army (1862); after varying fortunes was defeated by Grant (Nov. 23–25, 1863), and was relieved of his command; his brother, THOMAS (1810–72), was governor of N. Carolina (1855–9), U.S. senator (1859–61); Confederate attorney-general (1861–2).

**Bragg**, SIR WILLIAM HENRY (1862– ), Quain prof. of physics, London Univ., since 1915; is a specialist in X-rays and radioactivity; along with his son, Prof. W. L. BRAGG, Manchester Univ., has investigated methods of sound-ranging, and invented listening devices; has written many scientific works; K.B.E. (1920).

**Bragi**, god of poetry in northern myth.; possibly deified form of Bragi Roddason, Norweg. (8th or 9th cent.) minstrel.

**Braham**, JOHN (1774–1856), Eng. tenor vocalist; of Jewish parentage; sang at Covent Garden as a youth; later student in Italy, and on return to England had phenomenal career, having no rival as a tenor for over forty years. Braham built the St. James's Theatre (1836), and was a composer of some ability, his 'Death of Nelson' and 'All's Well' being still popular.

**Brahe**, PER, COUNT, THE YOUNGER (1602–80), Swed. chancellor; served with distinction in army; as gov.-gen. of Finland (1637–40, 1648–54) he gained great honour; entirely revolutionized system of government; introduced postal system; and founded Abo Univ. (1640).

**Brahe**, TYCHO (1546–1601), astronomer; born at Knudstrup, Sweden; discovered star Cassiopeia whilst resident in Germany (1572); was director of observatory of Uraniborg (1576–97); after death of Frederick II. and subsequent friction with Christian IV. he removed (1597) to Prague, where he worked in conjunction with Kepler; chief work, *Astronomiæ Instauratæ Mechanica*.

Dreyer, *Life* (1890).

**Brahmanism**, the religious system of the Brahmins, or sacerdotal caste of India. A body of sacred writings called *Vedas* is preserved. There are four collections of these writings, and *Brahmanas*, a kind of commentary on them (dating from 7th cent. B.C.). The type of religion shown in them is that of the great forces of nature, which seem to be personified. By degrees a pantheistic stage was reached. But Indian religion must always be viewed in relation to Indian history, and it must never be forgotten that an invasion of India by white-skinned Aryan race took place in early times, and the darker and more primitive peoples were subdued. In the Vedic hymns (which represent the primitive Aryan society) there is a military and noble and also a priestly class, both superior to the common people. In the fully developed Brahmanism we see a rigid caste system of four classes: the *Brahmana*, or priestly class; the *Kshatriya*, or warriors; the *Vasiya*, or trades-folk; and the *Sudra*, or serfs.

The first three of these represent the Aryan, the last the older inhabitants. The first three classes, though rigidly marked off the one from the other, were the 'twice-born.' The Sudras were purely servile. There could be a certain amount of inter-marriage. A man could marry beneath him if he had already a wife of his own rank. A devout Brahman was supposed to pass through four stages of religious life: he was to be first a student, then a householder, then a recluse,

then a beggar. The third stage was only to be entered on late in life, when he retired into the woods alone, living on wild herbs and accepting charity only when obliged. Gradually theistic besides pantheistic tendencies developed, and a conception of 'Brahma' as a personal god appeared. Older forms of devotion were grafted in; thus Brahma, Vishnu, and Siva, came to represent the creative, preservative, and destructive aspects of the world. Siva took the place of another Vedic god as the representative of reproduction. Each of the three had a female partner. A reformation was carried out by GAUTAMA (6th cent. B.C.), the Buddha, who, while he maintained caste, abolished the sacrificial and sacerdotal system.

Monier Williams, *Brahmanism and Hinduism* (1887), and *Indian Wisdom* (1893); Lyall, *Asiatic Studies* (1899).

**Brahman Ox.** See ZEBU.

**Brahmaputra**, riv., Asia, rising E. of Lake Manasowar, on table-land N. of Himalayas in W. Tibet, close to head-waters of Sutlej and Indus; has course eastward of c. 1,000 m., as Tsanpo, then turns S.E., across Himalayas, and passes through Assam to join Ganges (23° 51' N., 89° 46' E.). Length, c. 1,800 m. (navigable about 800 m.); drainage area, over 361,000 sq. m. Brahmaputra means 'Son of Brahma.'

**Brahma Samaj** ('the Society of God'), large religious community, founded in India in 1830 by Rajaram Mohun Roy; principle of creed is mystical monotheism.

**Brahms, JOHANNES** (1833-97), Ger. composer, born at Hamburg; an austere classicist, it has only been since his death that he has taken a foremost place among composers. He wrote symphonies, concertos, Hungarian dances, songs, and practically every musical form but the dramatic, all marked by skilful technique and greatness of rhythm; attains highest point in his *Lieder* and choral works, among which are well-known *Schicksalslied*, *Rinaldo*, *Triumphlied*. See *Life*, by Erb (1905), and *Brahms*, by Stanford (1912).

**Braid, JAMES** (1870- ), Scot. golfer; five times open champion of Great Britain (1901, 1905, 1906, 1908, 1910); winner of Fr. championship (1910), and of many tournaments; holds records of several courses; professional to Walton Heath Golf Club.

**Braidwood, tn.**, New South Wales (35° 26' s., 149° 46' e.); mining and trade in timber and dairy produce. Pop. 1,600.

**Braidwood, THOMAS** (1715-1806), Scot. educationist; opened at Edinburgh (1760) the first school in Great Britain for the education of the deaf and dumb; removed to London (1783), and his system was adopted in all similar institutions throughout the kingdom. See references in Boswell's *Life of Johnson*.

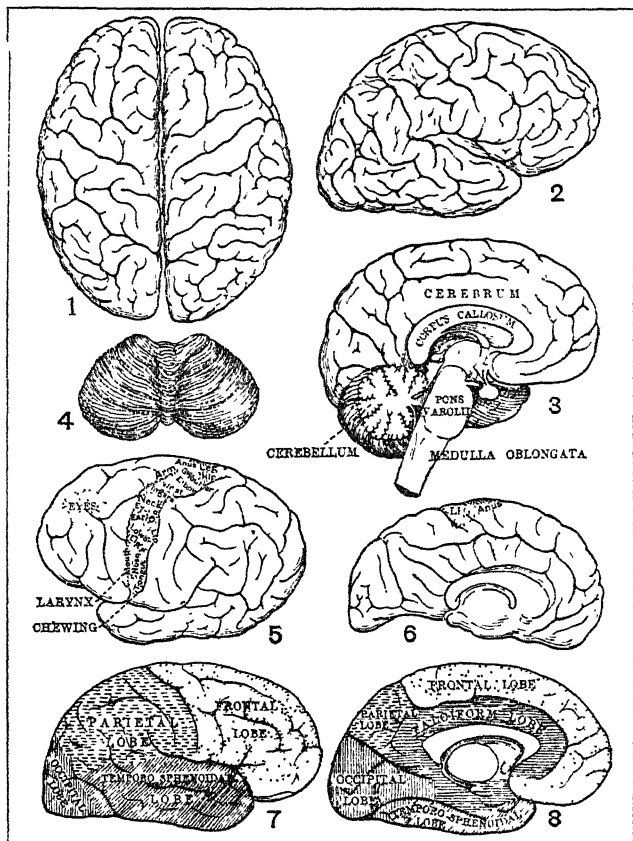
**Braila, tn.**, Rumania (45° 17' n., 27° 58' e.), on l. bk. of Danube, 12 m. s.s.w. of Galatz, is principal port for the grain trade and has extensive docks. Pop. 66,000. The town has been many times burned, captured, and sacked. It was occupied by German and

Bulgarian troops on Jan. 5, 1917. See RUMANIA.

**Braille, LOUIS.** See BLIND.

**Brain**, that part of the central nervous system contained in the skull; consists of the *cerebrum*, divided into two hemispheres, the great mass of the brain which dominates the working of the other parts; the *mid-brain*, a short stalk connecting the cerebrum with the *hind-brain*, which comprises the *pons Varolii*, bridging over the lower part of the stalk; the *cerebellum*, a large bi-lobular mass below and behind the cerebrum; and the *medulla oblongata*, the bulbous continuation of the spinal cord in the skull, below the cerebellum. The brain is enveloped by three membranes—the *dura mater*, the *arachnoid mater*, and the *pia mater*. The *dura mater* is the most external, closely applied to the interior of the cranial bones, and strong extensions of it dip down into the brain, the *falx cerebri*, a deep sickle-shaped partition, dividing the two hemispheres of the cerebrum, the *tentorium cerebelli* forming a floor between the cerebrum and cerebellum, and the *falx cerebelli* separating the halves of the cerebellum behind. The *dura mater* also forms channels, venous blood sinuses, for conveying the venous blood away from the brain. The *arachnoid mater* is a delicate membrane loosely covering the brain and separated from it by the *pia mater*, which closely covers the outer surface, dipping down into the furrows between the convolutions on the surface of the brain.

The *cerebrum* is divided by a



*The Brain.*

1, Cerebrum from above, showing convolutions; 2, right hemisphere; 3, section through the centre of brain; 4, cerebellum; 5, 6, motor areas of brain; 7, 8, lobes of the right hemisphere, exterior and interior aspect.

deep cleft, the great longitudinal fissure, into two equal hemispheres, joined together at the foot of the fissure by a broad trans-

verse band of fibres termed the *corpus callosum*. The substance of the cerebrum is composed of grey matter, consisting of

groups of nerve cells which form centres for sensation, thought, etc., and white matter, consisting of nerve fibres held together by a special connective tissue termed the neuroglia. There is a layer of grey matter covering the surface of the cerebrum, and this layer, under the microscope, is found to be made up of four layers of different types of branching nerve cells, from which numerous fine nerve fibres are given off. The surface of the cerebrum is thrown into folds called convolutions, or gyri, with furrows between termed sulci, or, in the case of the deeper ones, fissures. Because of these convolutions and sulci the surface area and therefore the grey matter of the brain is greatly increased. The depth of the furrows and the prominence of the convolutions are in direct proportion to the intelligence; intellectual persons have them very well marked, while persons of low intelligence, and, still more, idiots have them but slightly marked.

The furrows and convolutions have practically the same position in different brains; the two most important fissures are the fissure of Sylvius, which begins at the front of the inner margin of the lower surface of the hemisphere and extends outwards and upwards to about the centre of its external surface, and the fissure of Rolando, which extends obliquely downwards and forwards on the external surface from the middle of the superior margin of the hemisphere almost to the fissure of Sylvius. The hemispheres are divided into

lobes by the fissures: the frontal lobe is the front part of the cerebral hemisphere, bounded behind by the fissure of Rolando, and below by the fissure of Sylvius; the parietal lobe is the upper part and the side of the hemisphere, bounded in front by the fissure of Rolando, and below by the fissure of Sylvius, and an imaginary line drawn backwards in continuation of it; the occipital lobe is the back pyramidal part of the hemisphere, divided from the adjacent lobes by arbitrary boundaries, except on its inner aspect, where a deep fissure divides it off; the temporal lobe is the lower part of the front and side of the hemisphere, below the Sylvian fissure and an imaginary line drawn backwards from it. The *falciform* or limbic lobe is that part of the hemisphere on its inner surface, towards the longitudinal fissure. above, behind, and below the corpus callosum, while the *island of Reil*, or central lobe, is situated at the bottom of the fissure of Sylvius, and can only be observed when the lips of the fissure are pulled widely asunder.

If the corpus callosum be cut through so as to separate the hemispheres completely, the ventricles, or internal cavities of the brain, normally containing a clear fluid, can be observed. The lateral ventricles, one in each hemisphere, are cavities with an anterior, a posterior, and a descending horn, and each communicates with the third ventricle by a small opening, the foramen of Monro; the third ventricle is a narrow cleft between the hemispheres, below the corpus callosum, and

from it a channel, the aqueduct of Sylvius, leads backwards to the fourth ventricle, which is a shallow quadrilateral cavity, tapering to a point at its upper and lower extremities, above and behind the pons Varolii. The so-called fifth ventricle has no connection with the other ventricles, and is a little cleft in the partition between the lateral ventricles in front.

On each side of the third ventricle, composing that part of each hemisphere which forms its lateral wall, is an ovoid mass of grey matter, termed the optic thalamus, its superior surface forming part of the floor of the lateral ventricle. Extending in an arch from the anterior horn to the descending horn of each lateral ventricle, and bulging into it, is another mass of grey matter in the interior of each hemisphere, termed the caudate nucleus. On the outer side of the optic thalamus and the caudate nucleus, embedded in the white substance of the cerebrum between them and the surface, is another mass of grey matter, the lenticular nucleus. That part of the cerebrum between the optic thalamus and the lenticular nucleus is an important structure, composed of the nerve fibres which go to and from the nerve cells of the cerebral cortex, and is termed the internal capsule.

The *mid-brain*, which connects the cerebrum with the hind-brain, consists in its under part of two thick bands of nerve fibres, the *crura cerebri*, each of which emerges from the inner and under surface of the cerebral hemisphere

to connect it with the spinal cord; the superior part of the mid-brain consists of two pairs of rounded projections, the superior and inferior quadrigeminal bodies, while projecting over these from the back of the third ventricle is the pineal body, shaped like the stone of a cherry and considered to be a rudimentary third eye. The aqueduct of Sylvius, connecting the third and fourth ventricle, runs in the centre of the mid-brain.

The *hind-brain* comprises the pons Varolii, the cerebellum, and the medulla oblongata.

The *pons Varolii* forms a large rounded prominence on the under surface of the brain, bridging over that part between the medulla oblongata and the *crura cerebri*. It lies in front of the cerebellum, to which a broad band of fibres passes back from it at each side, and its posterior surface forms the floor of the fourth ventricle. It is mainly composed of nerve fibres linking up the different parts of the brain and going to and from the spinal cord, forming the white matter, and also of small masses of nerve cells, forming the grey matter, irregularly scattered through the white matter.

The *cerebellum* lies below and behind the cerebrum and behind the pons Varolii and medulla oblongata, and consists of a median portion, the vermis, at the sides of which lie two large rounded lateral parts, the lateral hemispheres. Both in front and behind, the cerebellum has a marked notch in the middle, the hemispheres forming the sides of the notch and the vermis the

bottom, and the posterior notch, which is the narrower, is occupied by a sickle-shaped fold of dura mater, the *falx cerebelli*. The surface is divided by curved parallel fissures, closely set together, into characteristic folds or lamellæ, and if a section is made through the body of the cerebellum it is observed that the arrangement of the branching fissures and lamellæ gives it a peculiar tree-like appearance, called the *arbor vitæ*. Like the cerebrum the surface is covered with a layer of grey matter, which, examined microscopically, shows two layers of nerve cells, with a layer of large pear-shaped nerve cells, peculiar to the cerebellum, at their junction; the interior of the cerebellum is composed of white matter. Some of the fissures which divide up the surface of the cerebellum are deeper and more evident than the others, and these divide the surface into recognized lobes; the most important is the great horizontal fissure, which begins at one side of the organ in front, its edges enclosing the cerebellar peduncles, and passes horizontally right round it, across the one hemisphere, the vermis, and the other hemisphere, to enclose the peduncles at the other side in front: this fissure is the division between the upper and lower surfaces of the cerebellum.

The cerebellum is attached to the other parts of the brain by three pairs of thick bands of fibres, the largest of which, the middle peduncles, pass forwards on each side to the pons Varolii, the superior peduncles passing upwards at each side to the

inferior quadrigeminal bodies of the mid-brain, and the inferior peduncles passing downwards at each side to the medulla oblongata.

The *medulla oblongata* is the transition stage between the spinal cord and the brain, its diameter increasing as it ascends upwards. The anterior and posterior median fissures of the spinal cord are continued up the middle of the front and back of the medulla respectively, and longitudinal furrows divide the anterior surface of the medulla into three distinct areas on each side of the median fissure, from within outwards—the pyramid, the olive, a bulging eminence, and the restiform body. Similarly, the posterior surface is divided, from within outwards, into the funiculus gracilis expanding into the clava, the funiculus cuneatus expanding into the cuneate tubercle, and the narrow funiculus of Rolando expanding into the prominent Rolandic tubercle. The central canal of the spinal cord is continued up the lower part of the medulla, and opens into fourth ventricle of the brain, upon the back of the upper part of the medulla, which constitutes the lowest part of the floor of the ventricle. The medulla is composed of nerve fibres connecting the brain and the spinal cord, forming the white matter, and also irregular small masses of nerve cells, forming the grey matter, scattered irregularly through the white matter.

*Weight of the Brain.*—The average weight (which has no bearing upon the intelligence) of

the human male brain is between 48 and 49 oz., the female brain being lighter, but only in proportion to the lighter weight of the female body.

*Physiology of the Brain.*—The functions of the cerebrum are connected with the higher faculties, the will, the intelligence, the senses, the control of movements of the body, while the cerebrum has also a controlling influence on the functions of the other parts of the brain and of the nervous system generally. It has been shown by experiment that different parts of the cerebrum have different functions, but the precise functions of the greater portion of the brain have yet to be discovered. The frontal lobes are the seat of the intellectual faculties, the occipital lobes are the centres of the sense of sight, the temporal lobes, immediately below the fissure of Sylvius, of the sense of hearing, and, on their internal surface, of the senses of taste and smell. The centre controlling speech is on the left inferior frontal convolution—Broca's convolution—while the postcentral convolution, immediately behind the fissure of Rolando, is associated with muscular sense. The area of the cerebral cortex controlling the movements of the different parts of the body has been mapped out with singular exactness, and occupies the præcentral convolution immediately in front of the fissure of Rolando, the area on the one side of the brain controlling the opposite side of the body. The area controlling movements of the leg is at the upper end of the præcentral

convolution; then come the trunk area, the arm area lower, but still above the middle of the convolution; then the neck area, the face area lower still, and the tongue area lowest. Farther in front of the middle of the convolution is the area controlling the eyes and head.

The functions of the cerebellum are associated with the co-ordination of movements, while it gives force and tone to the general nervous system, qualities which have been found to disappear when it is removed. In the pons Varolii and medulla oblongata are centres governing the respirations, the beating of the heart, swallowing, vomiting, and other important physiological processes.

*Pathology of Brain.*—*Menigitis*, or inflammation of the membranes, may be due to infection from a wound, or to a specific organism (cerebro-spinal menigitis, tuberculosis, syphilis).—*Brain fever*, popular term applied either to nervous prostration after severe mental effort or strain (treated by rest, change of air, and tonics), or to menigitis.—*Concussion* and *compression* of brain. The former is a condition due to shock to the brain through injury, without any actual effect on the brain tissue. The individual is collapsed, with feeble pulse. There is often vomiting on consciousness beginning to return. The treatment is absolute rest, without any stimulant. In compression the symptoms are due to increase in intra-cranial pressure due to hæmorrhage, inflammatory products, or tumours, etc. Irritation and restlessness



are the first signs, then paralytic symptoms and unconsciousness gradually come on. Operative treatment is desirable.

*Abscess of brain* is always due to bacterial infection, usually from disease of the internal ear. The symptoms are pain, fever, and usually unconsciousness; and the treatment is to open the abscess as soon as possible, let out the inflammatory material, and drain.—In *anæmia of brain*, due to exhausting diseases, or to loss of blood from wounds, etc., the head should be kept low, and the individual treated for anæmia as in other cases.—*Tumours* vary greatly in structure, and their symptoms vary also, depending on the situation of the tumour. Some—*e.g.*, syphilitic gummata—may be treated medically, others by operation, but in the majority the outlook for the patient is not hopeful.

See, in regard to anatomy and physiology, EAR; EYE; HYPNOTISM; MUSCLE; NERVOUS SYSTEM; SLEEP; SMELL; SPINAL CORD; TASTE; TOUCH; VISION; and, in regard to pathology, APHASIA; APOPLEXY; EPILEPSY; HYDROCEPHALUS; INSANITY.

**Brain Coral**, massive coral with convolutions resembling the brain; chiefly in W. Ind. Ocean.

**Brainerd**, DAVID (1718–47), Amer. missionary to N. Amer. Indians; his *Journal* is much read.

**Brain's Powders**, explosives consisting of nitroglycerine, potassium chlorate or potassium nitrate, and a combustible such as charcoal, sugar, sawdust, etc.

**Braintree**. (1) Mkrt. tn., Essex, England (51° 53' N., 0° 33'

E.); engineering; silk. Pop. 6,200. (2) Tn., Massachusetts, U.S. (42° 14' N., 71° 1' W.); electrical machinery; leather, shoes, carpets. Pop. 8,100.

**Braising**. See COOKERY.

**Braithwaite**, JOHN (1797–1870), English engineer; devised the donkey engine (1822), and first practical steam fire-engine.

**Braithwaite**, SIR WALTER PIPON (1865– ), Brit. soldier; served in Burma, and S. African War (1900–2); commandant of Staff Coll., Quetta, India (1911–14); chief of staff during Dardanelles expedition (March to Oct. 1915), and commanded the 9th Army Corps in France during final Allied offensive. Was knighted (1918).

**Brake**, instrument to check the velocity of moving body, or to bring it to rest, by increasing the resistance to its motion. Two of the simplest forms of brake action are the pressing of a metal shoe against the rim of a moving wheel, and the tightening of a strap on a revolving drum. On slow-moving road vehicles the wheels may be prevented from rotating by fixing skids beneath them, or by passing through the spokes a chain fastened to the vehicle. The resistance of fluids is sometimes used for braking purposes, as when revolving blades are checked by the resistance of the air or of some liquid in which they are arranged to work. Brakes may be applied by muscular force acting through a lever or screw, as in the case of most road vehicles; but the power thus obtained is insufficient for many purposes, and the power-brake becomes necessary. Amongst

the many different types of power-brakes may be mentioned mechanical brakes worked by springs, or chains wound on drums; hydraulic brakes, in which the power obtained by forcing water through pipes is transmitted by suitable mechanism to the brake-shoes; electric brakes; compressed air and vacuum brakes; and brakes worked by steam or water from an engine boiler, operating through cylinders. For railway brakes, two systems are in use, Westinghouse and the Vacuum; the former is worked by compressed air, the latter utilizes the pressure of the atmosphere by creating a partial vacuum.

**Brake**, tn., Oldenburg, Germany (53° 19' N., 8° 29' E.); weaving, ropes. Pop. 5,400.

**Bramah**, JOSEPH (1748-1814), Eng. mechanic; invented the hydraulic press, locks, machine for printing bank-notes, etc.

**Bramante**, DONATO (1444-1514), Ital. architect; he was patronized by Popes Alexander VI. and Julius II.; joined the Belvedere Palace to the Vatican, and was commissioned to rebuild St. Peter's, which, begun in 1506, was completed after his death by Michelangelo and others.

**Brambanan**, vil., Java (7° 36' S., 110° 32' E.); six groups of temples, probably Buddhist (2nd half 13th cent.).

**Bramble**, or BLACKBERRY (*Rubus fruticosus*), a common Brit. plant of family Rosaceæ; fruit much appreciated for preserves.

**Brambling**. See under FINCH FAMILY.

**Brampton**. (1) Mrkt. tn., Cumberland, England (54° 56' N., 2°

44' W.); antiquities. Pop. 2,500. (2) Tn., Ontario, Canada (43° 47' N., 79° 56' W.); flour, pumps, gas pipes. Pop. 3,500.

**Brampton**, BARON. See HAWKINS, SIR HENRY.

**Bramwell**, BYROM (1847- ), Scottish physician; government medical referee for Scotland; has been president, Royal Coll. of Physicians, Edinburgh; author of numerous medical works.

**Bramwell of HEVER**, BARON (GEORGE WILLIAM WILSHERE BRAMWELL) (1808-92), was well-known Eng. judge; lord justice of the Court of Appeal; with his name are associated the much-debated propositions: (1) That a corporation is legally incapable of malice; (2) that insanity is not necessarily an excuse for crime.

**Bran** (1) is a mythical Celtic hero, who presided over poetry and bardic music; (2) dog of Ossian's Fingal.

**Brand**. See BRANDING.

**Brand**, SIR CHRISTOPHER JOSEPH QUINTIN BRAND, South African airman, nephew of Sir Jan Hendrik (1823-88), president of Orange Free State. He came to England in 1915, joined Air Force, and did valuable service in France. During last air raid on England he brought down a Gotha, for which he received D.S.O. With Lieutenant-Colonel Pierre van Ryneveld was first to accomplish flight from England to Cape Town (March to April 1920); knighted (May 1920).

**Brand**, SIR HENRY BOUVIER WILLIAMS (1814-92) (VISCOUNT HAMPDEN AND BARON DACRE), Eng. politician; Liberal whip (1866-8); Speaker of House of Commons (1872-84).

**Brand**, SIR JAN HENDRIK (1823-88), president of the Orange Free State, S. Africa, for several successive terms.

**Brandan** (or BRENDAN), ST. (*d.* 578), Irish Benedictine abbot of the monastery of Clonfert (Galway). The real Brandan became confused with a legendary hero who sailed to an island paradise in the neighbourhood of the Canaries or the W. Indies. The existence of 'St. Brandan's Isle' was long believed in by geographers, and numerous search expeditions were undertaken.

**Brandenburg**, prov. of republic of Prussia, Germany (52° 30' N., 13° 45' E.); sandy plain ('sand-box of the Holy Roman Empire'), with fertile districts; fruit, flax, barley, rye, hemp, tobacco; iron, chalk, alum; cap. Berlin. Area, 15,376 sq. m.; pop. 4,092,600.

*History.*—Ger. margraviate and electorate, nucleus of later kingdom of Prussia. Brennibor (later Brandenburg) was captured by Henry I. of Germany (923); mark of E. Saxony divided, northern portion becoming later margraviate of Brandenburg (965); Albert the Bear was made margrave of N. mark (1134), and on death of Duke of Brandenburg (1140) took title of Margrave of Brandenburg; a colonizer and civilizer; territory extended under the three Ottos (1130-67); ruled by imperial house of Wittelsbach directly or indirectly, 1323 onwards; Louis IV. granted margraviate to his son Louis (1323), who after a reign of anarchy enfeoffed his step-brothers, of whom Louis was recognized as one of seven electors by Golden Bull (1356). They bequeathed the

remainder of the margraviate to Wenceslaus, son of Charles IV., who (1373-78) ruled in his name, restoring law and order, and causing Domesday survey to be made; Wenceslaus (1410) granted electoral vote to Frederick VI. of Hohenzollern, who was made governor (1411), and in 1415 purchased the electorate, margraviate, and office of chamberlain, ever since held by members of his house. Frederick I. (1415-40) put down nobles; Frederick II. (1440-71), called 'Iron,' reduced rebellious towns and purchased new mark of Brandenburg; Albert Achilles (1471-86) extended territory, and entailed (1472) margraviate and electorate; Joachim I. (1499-1535) restored law and order and encouraged trade; Joachim II. (1535-71) suppressed monasteries, established national Church, obtained (1569) half duchy of Prussia and remainder of other half; John George (1571-98), careful administrator, Lutheran; John Sigismund (1608-19) started claim to Cleves, Julich, and Berg, and became (1618) Duke of Prussia; George William (1619-40) brought disaster on Brandenburg through slothful policy in Thirty Years' War; Frederick William, the 'Great Elector,' put down nobles, created a wonderful army, started a navy, expelled Swedes, extended territory, and became leader of Reformation; Frederick III. continued his father's policy, and in 1701 was crowned King of Prussia. For subsequent history, see PRUSSIA.

**Brandenburg**, tn., Prussia (52° 26' N., 12° 32' E.); on riv. Havel; castle; cathedral; cloth, paper, leather. Pop. 50,200.

**Brandes, CARL EDUARD COHEN** (1847– ), Danish author and politician, brother of G. Brandes; an Orientalist; ed. Ind. dramas; pub. two vols. of literary studies and portraits and a naturalistic novel; joint ed. with brother of *Det Nittende Aarhundrede* (1874).

**Brandes, GEORG MORRIS COHEN** (1842– ), Dan. literary critic; established European reputation by brilliant critical writings, including studies of Shakespeare, Ibsen, Anatole France; work of high merit is *Main Streams in Nineteenth Century Literature* (1886–1906); influence on Scandinavia profound; pub. 33 vols. in all; anti-Christian attitude. His *Samlede Skrifter* appeared (1900–8); he has also written on *The World War, Voltaire and Caesar* (2 vols.).

**Brandes, JOHANN CHRISTIAN** (1735–99), Ger. comedian and dramatic poet; popular farces. Daughter, **CHARLOTTE WILHELMINA (MINNA) FRANZISKA** (1765–88), singer of distinction and popular composer.

**Branding** (O. Teut. *brinnan*, 'to burn'), legal punishment used in England chiefly for vagrants; abolished, except for deserting soldiers, in 1829, and in 1879 entirely. Method of scorching signs into animal's flesh for purposes of identification.

**Brandis, CHRISTIAN AUGUST** (1790–1867), German philologist; was professor of philosophy at Bonn (1821); author of several authoritative philological and philosophical works; the chief, *Handbuch der Griechisch-römischen Philosophie* (1835–66), contains much sound criticism.

**Brandl, ALOIS LEONHARD**

(1855– ), Austrian critic and student of Eng. literature; delivered ann. Shakespearean oration in London to Brit. Academy (1913); has written on Coleridge, Shakespeare, etc., and has ed. Schlegel and Tieck's Shakespeare.

**Brandon**, city, Manitoba, Canada (49° 48' N., 99° 58' W.); important shipping point for wheat; has government experimental farm. Pop. 13,800.

**Brandy** (O. Eng. *brandywine*; Ger. *Branntwein*, i.e., burnt wine), a spirituous liquor; average percentage of alcohol, 54; sp. gr. '93; prepared by distillation of wine; the best at Cognac; exported also from California, Spain, and Canada. Pure brandy is colourless; pale brandy derives its colour from cask, brown brandy from caramel; flavour and aroma due to various ethers: furfurol, cenanthic, butyric, and acetic; often made by adding these to alcohol and water; has recently been legally defined as genuine only if distilled from grape wines by pot still.

**Brandywine Creek**, stream, Pennsylvania (39° 42' N., 75° 34' W.); at Chadd's Ford (Sept. 11, 1777) Washington defeated by Cornwallis.

**Branford**, wat.-pl., Connecticut, U.S. (41° 17' N., 72° 50' W.), on Long Island Sound. Pop. 6,100.

**Brangwyn, FRANK** (1867– ), Eng. artist, born at Bruges, of Welsh extraction; was pupil of William Morris; went to sea as a youth, afterwards travelled in East; noted for breadth of style and sumptuous sense of colour; R.A., and member of many foreign academies; vice-president of Poetry Society.

**Branks**, punishment for scolds. From a headpiece which rested on the shoulders an iron bar projected and held down the tongue.

**Brant** (*Branta bernicea*), species of wild duck found in Europe and America; it breeds freely in Arctic regions.

**Brant, JOSEPH**, or **THAYEN-DANESEA** (1742-1807), famous Mohawk Amer. Ind. chief; fought with English against French; became colonel and missionary of Church of England; said to be ablest of all Ind. leaders.

**Brantford**, city, Ontario, Canada (43° 12' N., 80° 20' W.), on Grand R.; headquarters of Ind. Six Nations; extensive industrial establishments; woollen and cotton. Pop. 23,000.

**Branting, KARL HJALMAR** (1860- ), Swed. Socialist; ed. journals; first Socialist deputy to Riksdag (1896); declined seat in cabinet (1911); during Great War stood decisively for neutrality.

**Brantôme, PIERRE DE BOURDELLE, SEIGNEUR AND ABBE DE** (c. 1540-1614), Fr. historian, soldier, and courtier; was chamberlain to Charles IX. and Henry III., and enjoyed patronage of Catherine de' Medici. His *Mémoires* (pub. after his death) give a valuable picture of profligacy of contemporary society.

**Branxton**, vil., Northumberland, England (55° 38' N., 2° 10' W.), near battlefield of Flodden.

**Bras d'Or**, almost land-locked, tideless gulf, Cape Breton I., Nova Scotia, Canada; divided into two portions (Little and Great), connected by Grand Narrows (bridged by Intercolonial Ry.); ship canal connects S. end of Great Bras d'Or with St.

Peter's Bay; lumbering on its shores; productive fisheries.

**Brasenia**, genus of water-lilies of one species only—*B. peltata*, the water buckler; purple flowers; nutritious; the leaves used against dysentery and phthisis.

**Brash**, disease due to disordered stomach and bowels, accompanied by acidity of mouth; frequently infantile.

**Brasidas**, Spartan soldier and orator; was most famous general of Peloponnesian War; relieved Methone (431 B.C.); prevented Athenian attack on Megara; won over Acanthus, Stagirius, and other Athenian allies; routed Athenians before Amphipolis, but was himself killed in the battle (422).

**Brass**, alloy of copper and zinc in various proportions (usually three parts copper to one or two of zinc); is prepared by fusing metals together in plumbago or clay crucibles. Brass is highly tenacious, malleable, and ductile, and makes good castings. Addition of 2 to 4 per cent. iron makes it harder. In machinery brasses are the brass fittings in a bearing in which the revolving journal lies.

**Brasses, MONUMENTAL**, in England, date from the beginning of the 13th cent., though the earliest now extant is one in the church at Stoke Dabernon, Surrey, dated 1277. They consist of plates of brass inlaid in slabs of polished stone, and usually contain a representation of the person they are intended to commemorate, either in the form of the plate itself, or incised in the plate, together with the coat of arms and an inscription. They are valuable

for the light they throw upon the people of the period, their dress, armour, etc. The finest specimens are found amongst those engraved before the 15th cent. They are specially abundant in Kent, Essex, Oxfordshire, and Norfolk. The art, of late years, has been successfully revived.

**Boutell**, *Monumental Brasseyes of England* (1849); Macklin, *The Brasseyes of England* (1907).

**Brassey**. (1) THOMAS (1805–70), Eng. railway contractor; constructed Paris and Rouen Ry. (1841–3), Rouen and Havre Ry. (1843–5), Great Northern Ry. (1847–51), and many others. At one time controlled 75,000 men and capital of £36,000,000. Said to have left £7,000,000 of money. (2) THOMAS, 1ST EARL (1836–1918), M.P. for Hastings (1868–85); civil lord of Admiralty (1880–4), and secretary (1884–5); was raised to the peerage in 1886. Famous with Lady Brassey for yacht *Sunbeam*, of whose voyage round world she wrote an account. He founded and ed. *Naval Annual*, and wrote number of works on wages, navy, etc. (3) THOMAS ALLNUTT, 2ND EARL (1860–1919), commanded Sussex company of Imperial Yeomanry in S. African War (1899); strongly interested in navy; ed. *Naval Annual* after 1890; author of *Problems of Empire and Case for Devolution* (1913).

**Brassica**, in Bentham system includes cabbages, also mustards; in all about a hundred species of annual and biennial herbs of the family Cruciferae; *B. oleracea*, the cabbage, most important.

**Brasso**, Transylvania. See KRONSTADT.

**Brathwaite**, RICHARD (1588–1673), Eng. poet; author of *Barnabee's Journall* (1638), a humorous itinerary valuable for its topographical information; other works include *The Poet's Willow* (1614), *The Shepherd's Tales* (1621), etc.

**Bratiano**. (1) JON (1821–91), Rumanian statesman; leader in Rumanian revolt (1848); secured deposition of Cuza and called Prince Charles of Hohenzollern-Sigmaringen to throne; minister (1866–70, 1876–88). (2) JON J. J. C. (1866– ), Rumanian statesman, son of above; minister of public works (1892); secretary for foreign affairs (1904); prime minister (1908–10), and again in 1914; pursued waiting policy, but brought Rumania into the Great War (Aug. 27, 1916); one of three Rumanian delegates to Peace Conference.

**Bratsberg**, co., Norway, on s. coast, embracing dist. of Telamarken; mountainous; fishing, forestry, and agriculture. Chief tn., Skien, near which Ibsen born. Area, 5,865 sq. m.; pop. 108,100.

**Brattice**, transverse partition of board, brick, plate-iron, etc., set up in galleries of mines to direct ventilating air currents. Heavy waterproof cloth similarly used is brattice cloth.

**Brattleboro**, vil., Vermont, U.S. (42° 48' N., 72° 34' W.), in beautiful dist.; Amer. organs, furniture; centre of Vermont maple sugar industry. Pop. 6,500.

**Braun**, LUDWIG (1836– ), Ger. painter of national scenes and battle pictures (Schleswig-Holstein campaign; wars of 1866 and 1870–1); prof. at Munich (1902):

**Braunsberg**, tn. and seapt., E. Prussia (54° 23' N., 19° 48' E.); some shipping trade; breweries and tanyards; Lyceum Hosianum (1579), Jesuit educational centre in 17th cent. Pop. 13,000.

**Brava**, or **BARAWA**. (1) Coast tn. and port, Ital. Somaliland, E. Africa (1° 6' N., 44° 3' E.); trade with Arabia and India. Pop. 5,000. (2) Most southerly of Cape Verde Islands. Area, 23 sq. m.; well cultivated; guano. Pop. 10,000. (3) **POINT**, cape N.W. of St. Miguel Bay, Gulf of Panama (8° 23' N., 78° 25' W.).

**Bravura**, musical term for florid and brilliant performance; mere display discounted by best musicians.

**Brawling**. By the Brawling Act (1860) it is provided that proceedings may be taken against any person committing violent or indecent behaviour in any place of worship or burial-ground of any denomination. The penalty is £5 or two months' imprisonment. Clergymen as well as laymen may be charged under it, but the former are also liable to prosecution before the eccles. courts. Persons guilty of brawling were formerly branded with the letter F (fraymaker).

**Braxfield**, **ROBERT MACQUEEN**, LORD (1722-99), famous Scot. judge; held office of lord justice clerk from 1788 till death; earned epithets of 'hanging judge' and 'Jeffreys of Scotland' by his merciless sentences. Prototype of 'Weir of Hermiston' in R. L. Stevenson's novel of that name.

**Bray**. (1) Vil., Somme, France (49° 56' N., 2° 43' E.), scene of fighting in 1914-18; during Ger.

break-through of March 1918 vil. captured, but recaptured by Australian troops (Aug. 23, 1918). (2) Vil., Belgium (50° 26' N., 4° 6' E.), 7 m. E. by s. of Mons; held temporarily by the Brit. 1st Corps under Sir Douglas Haig on Aug. 23, 1914.

**Bray**, **ANNA ELIZA** (1790-1883), Eng. novelist whose works show familiarity with local antiquities, legends, and domestic annals of Cornwall and Devon.

**Bray**, **THOMAS** (1656-1730), Eng. divine; helped in foundation of S.P.C.K. (1698) and the S.P.G. (1701), and organized a scheme for providing libraries for clergy in England and America.

**Bray**, **VICAR OF**. Original of this song, Simon Aleyn, who held small living of Bray in Berks (1540-88) during reigns of Henry VIII., Edward VI., Mary, and Elizabeth; song dates from 18th cent., and makes vicar live in reigns of Charles II., James II., William III., Anne, and George I.

**Brayera**, genus (natural order Rosaceæ) closely allied to *Poterium*, comprising *B. anthelmintica*, tree 20 ft. high, wild on tablelands of Abyssinia; flowers exported and used in medicine as cure for tapeworm.

**Brayley**, **EDWARD WEDLAKE** (1773-1854), Eng. antiquary and topographer; supplied letterpress for *The Beauties of England and Wales* (25 vols. 1801-15).

**Bray**, **WENCESLAO**, elected president of Brazil (March 1914); handled critical situation created by Great War with considerable firmness and tact.

**Brazen Head**, supposedly oracular contrivance said to have power of prophetic speech; one

owned by Friar Bacon; others by Pope Sylvester II., Robert Grosseteste (1175-1253), and Albertus Magnus (1193-1280).

**Brazil**, republic, occupying nearly half the S. Amer. continent ( $5^{\circ} 10' \text{ N.}$ - $33^{\circ} 46' \text{ S.}$ ,  $34^{\circ} 45'$ - $73^{\circ} 50' \text{ W.}$ ); extreme length, 2,660 m.; breadth, 2,700 m. Brazil is bounded N. by Venezuela, Brit., Dutch, and Fr. Guiana; N.E. by N. Atlantic, S.E. by S. Atlantic; S.W. by Uruguay, Argentina, Paraguay, Bolivia; W. by Peru, Ecuador, Colombia; N.W. occupied by basin of Amazon and tributaries; S.W. is in Paraguay basin; both these areas have large amount of unhealthy, low-lying, and swampy land; E. and S.E. occupied by great plateau, average elevation over 3,000 ft., and by higher tableland cut by deep valleys, having appearance of series of mountain ranges, some reaching height of over 7,000 ft.; these, running parallel with Atlantic, render communication with interior very difficult; large part of country still unexplored. Chief mts. are Mar, Orgãos, Espinhaço, Mantiquiera, Geral, Vertentes, Pyreneos, Santa Martha, and Piahy ranges in eastern coastal and central districts. Chief tributaries of Amazon are Japura, Rio Negro from N., Jurua, Purus, Madeira, Tapajos, Xingu from S. Tocantyns flows northward, entering sea near mouths of Amazon, and San Francisco R. cuts across eastern ranges, entering sea between Maceio and Aracaju; Paraguay, Taquary, and Parana drain S.; Madeira and rivers E. of it, and Parana and tributaries, flow through

tableland and hills, and have many falls and rapids. Chief rvs. are Rio Janeiro (cap.), Bahia, and Pernambuco. Climate varies greatly; mean temp. ranges between  $63^{\circ}$  and  $79^{\circ} \text{ F.}$ ; rainfall between 50 and 100 in.

Flora includes cabinet woods, rubber, palms, mimosa, bombax, lianas, grasses, ferns, cypresses, acacias, myrtles, coffee, cacao, tobacco, and many other valuable trees and plants. Fauna includes many kinds of birds and snakes, monkeys, deer, bats, opossums, jaguars, pumas, sloths, armadillos, rodents, etc.

*Resources.*—Timber and other vegetation of great tropical forests along Amazon and elsewhere are most valuable, including caoutchouc, fibre plants, nuts, furniture woods, dye woods, drug plants. Cultivated products include coffee, sugar-cane, tobacco, cotton, maté, rubber, cassava, cinchona, cocoa, vines. In S. inland provinces are raised great herds of cattle. Minerals are abundant but undeveloped, except gold; in S. are beds of coal, lignite, bituminous schist, peat; silver, lead, iron, copper, manganese, quicksilver also occur; diamonds are found in Minas Geraes, Bahia, São Paulo, Matto Grosso; other deposits are saltpetre, rock salt, mineral oil, china clay.

Brazil is largely agricultural, with only a small proportion cultivated at present, but there are some industries, including cotton spinning and weaving, woollen manufactures, silk weaving, flour mills, fruit preserving, distilling, brewing; imports food-stuffs, coal, coke, cottons, machinery, wool-



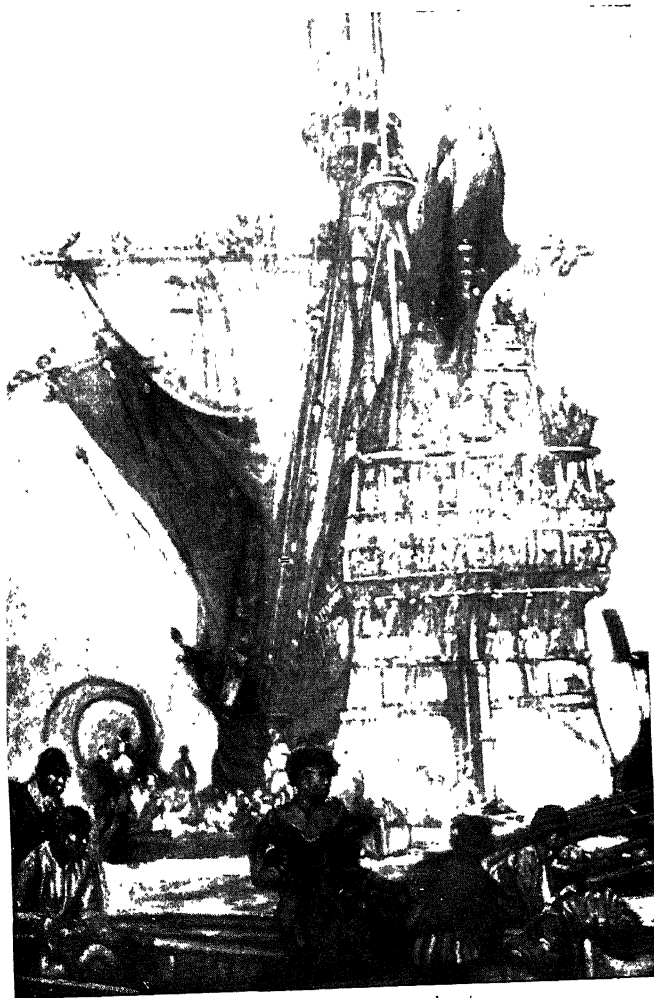
lens, chemical products, metals, furniture, leather goods, books, etc.; exports coffee, rubber, tobacco, sugar, cocoa, maté, gold, hides, cotton. Railway mileage (in 1917, 17,159) is in process of extension; telegraphic communications are controlled by state, and a wireless system is being completed.

Inhabitants of Brazil include Italians, Portuguese, Spanish, Germans, English, Indians, Africans, half-breeds. Area, 3,275,510 sq. m.; pop. (est.) 27,470,000.

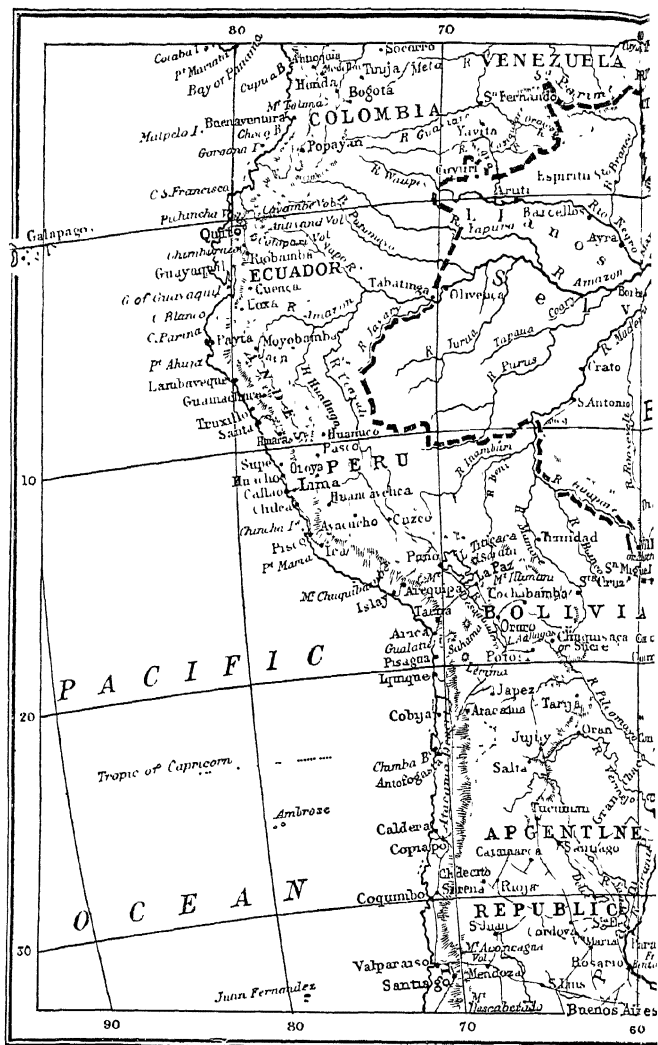
*History.*—Brazil has oldest civilization in western hemisphere; first sighted by Span. comrade of Columbus, named Pinzon, who explored mouths of Amazon in 1500; later in same year Port. navigator Cabral reached coast of Brazil, and took formal possession of country in name of King of Portugal. Portuguese established fort at Pernambuco (c. 1526), which soon afterwards was sacked both by French and by an Eng. adventurer, Hawkins. In 1530 first systematic attempt at settlement was made, João III. of Portugal sending Affonso de Sousa to divide country into 'capitaneas,' or portions of land which were granted to such Port. subjects as undertook to develop them and subdue aborigines. Affonso was aided by Caramuru, whom he found already settled here, in founding town of Bahia. The result of capitanea system was that number of abuses crept in, Port. colonists ill-treating the natives and thus causing revolts and race hatreds; Port. government therefore sent Thomé de Sousa in 1549 to act as gov.-gen.; he was accompanied by

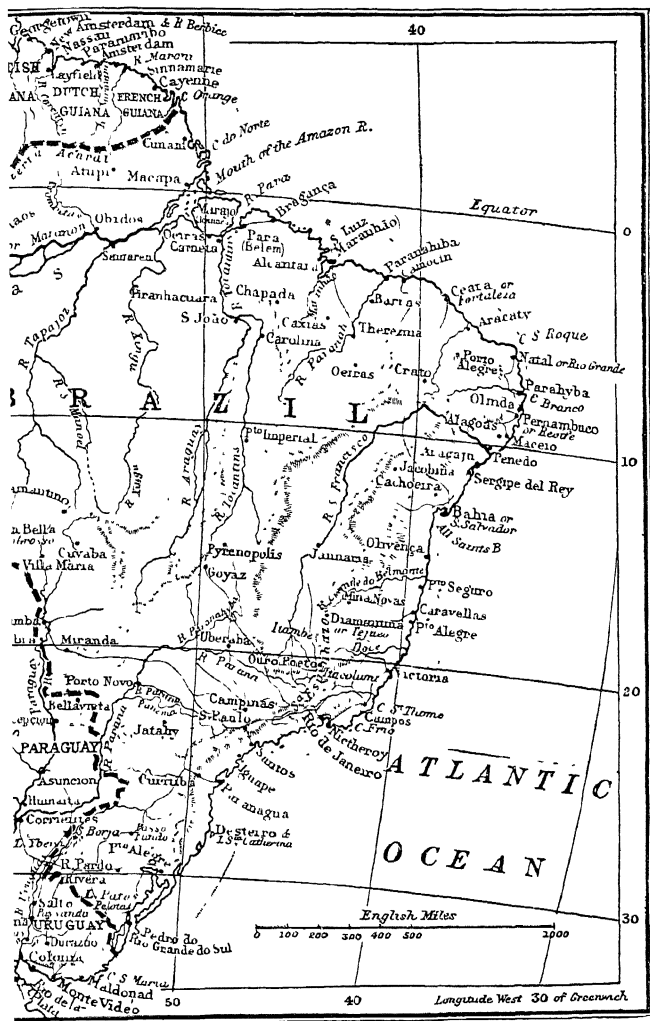
4,000 settlers and six Jesuits; latter had great share in developing civilization in Brazil; former intermarried with Indian women, thus creating Brazilian nation, which in about fifty years was practically a European race.

In 1578 governor had to swear allegiance to Philip II. of Spain, who had annexed Portugal in that year. From this time various attacks and invasions were made by French, Dutch, and English. Santos was twice sacked (1583, 1591); Pernambuco taken by French and English (1595); Dutch repulsed from Bahia (1599, 1604); Bahia taken by Dutch (1621); compelled to withdraw (1625); but in 1629 they reduced great part of coast of Brazil, and established their government, of which Maurice of Nassau became president in 1637. With restoration of Port. independence in 1640, connection of Brazil with Spain ended. Dutch were compelled to leave country by Portuguese after many years of war, and in 1713 treaty was made with French, who also retired, English, French, and Dutch henceforth holding the Guianas, and leaving Brazil to Portuguese. Principal event of later 18th cent. was expulsion of Jesuits in 1760; their influence, at first beneficial, had declined, and many of them suffered ill-treatment when expelled. In 1763 Rio became seat of government. Following cent. saw great changes in history of Brazil. In 1807 Napoleon's invasion of Portugal resulted in flight of royal family to Brazil; the regent, Don João, was welcomed with enthusiasm, and great advances took place in civiliza-



*An example of Frank Brangwyn's art—*  
FRANCIS DRAKE'S FAMOUS VESSEL, THE 'GOLDEN HIND.'





### MAP OF BRAZIL.



AN AMAZONIAN FOREST, BRAZIL.

tion. In 1813 country was declared a kingdom, and in 1816 Don João succeeded his mother, Queen Maria, as João VI. of 'Portugal, Brazil, and Algarves.' He, however, returned to Portugal in 1821, leaving administration of Brazil to his son, Don Pedro. The formal separation of Brazil from Portugal followed.

Don Pedro, ordered to return to Portugal, refused to do so, and in 1822 he became first emperor of Brazil, and granted constitution; independence was recognized by Portugal in 1825; northern provinces, having rebelled, were subdued with assistance of Lord Cochrane; and soon afterwards war broke out with Uruguay, ending in 1828 in establishment of that state as independent republic. Pedro I.'s administration was marked by political agitations which culminated in 1831 in revolt; he then abdicated and left for Europe, country being under regents during his son Pedro II.'s minority, which ended in 1840. Pedro II.'s reign was marked by civil war and wars against Argentina, Uruguay, Paraguay; his daughter Isabel thrice acted as regent, one of her principal acts being the abolition of slavery (1888). Next year it was rumoured that Pedro II. meant to abdicate in her favour, whereupon a bloodless revolution was effected, and a republic proclaimed; the imperial family left for Lisbon, and Marshal Fonseca became first dictator and afterwards president of new republic. Brazil was now a federation of twenty states; administration of first two presidents

marked by violence and disorder, various controversies and revolts occurring; second president, Marshal Peixoto, retired in 1894, succeeded by Moraes, the first civilian president; he introduced financial reforms and suppressed several insurrections, and on retiring was succeeded by Campos Salles, who, like his successor, Dr. Alves, played considerable part in financial development of Brazil. Sixth president, Affonso Penna, introduced extensive system of irrigation and established Caisse de Conversion; his successor in 1909 was Dr. Peçanha; but when election took place Hermes da Fonseca, war minister, was chosen as president; succeeded by Wenceslao Braz in 1914; present president is Dr. Epipacio Sessoa, elected 1919.

*Government.*—Republic of Brazil consists of federal district, one national territory, and 20 federated states; president, who with vice-president and ministers of state forms executive, is elected by direct vote, holds office four years; legislative power lies with Congress, composed of chamber of deputies and senate; former has 212 members elected for three years, and latter 63 members elected for nine years. The states are Amazonas, Para, Maranhão, Piauhý, Ceará, Rio Grande do Norte, Parahyba, Pernambuco, Alagoas, Sergipe, Bahia, Espirito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catharina, Rio Grande do Sul, Matto Grosso, Goyaz, Minas Geraes. Each state has its own local government, which must be republican in form, keeps up its own administra-

tion, and uses most of its own revenues for its own benefit; while the federal government keeps up the army and navy, superintends the general administration of the states, and is charged with the direction of the home and foreign policy of the republic. There is no state religion; education is not obligatory. Military service is nominally compulsory. On Oct. 26, 1917, Brazil declared war on the German Empire.

P. Denis, *Brazil* (1911); C. W. Domville-Fife, *United States of Brazil* (1910); Koebel, *The South Americans* (1915); *Brazilian Year-book*.

**Brazil**, city, Indiana, U.S. (39° 32' N., 87° 11' W.); coal, clay; pig iron; consequent industries. Pop. 9,300.

**Brazil Nut**, seed of *Bertholletia excelsa*, tree allied to myrtle group, native of S. Amer. tropics (100–150 ft.); fruits, woody nuts large as cannon balls; exported from Para (Para nuts); yield oil.

**Brazing and Soldering**, processes for uniting metallic surfaces by fusing between them other metallic substances called solders. In brazing (or *hard soldering*), *spelter*, a kind of brass, is employed, the surfaces being cleaned and heated, and fusion assisted by borax. In *soft soldering* (e.g., tin ware), fusion is effected by heated copper wedge.

**Brazos**, riv., Texas, U.S., formed by junction of Clear Fork and Salt Fork rivers; enters Gulf of Mexico (28° 56' N., 95° 9' W.). Length, over 900 m.; navigable to Columbia (40 m. from mouth).

**Brazza**, largest of Dalmatian

islands, Jugo-Slavia (43° 20' N., 16° 40' E.); marble, wine, olives, figs, almonds; fisheries. Area, 153 sq. m.; pop. 22,800.

**Brazza**, PIERRE PAUL FRANÇOIS CAMILLE, COUNT SAVORGNAN DE (1852–1905), Fr. explorer and colonial commissioner; explored Ogowe R., W. Africa (1875–8); sent on political mission to the Congo (1880–2); appointed commissary-general of Fr. W. African territory (1886), and governor (1888–97); returned to Africa (1905) to inquire into alleged ill-treatment of natives by Fr. officials; died in Senegal when report barely finished.

**Brazzaville**, tn., Fr. Congo, Equatorial Africa (4° 15' S., 15° 20' E.), on Stanley Pool, riv. Congo; headquarters of gov.-gen.; railhead. Pop. c. 5,000.

**Breach**. *Breach of trust* is failure to fulfil moral and sometimes legal obligation; *breach of promise* to marry is actionable as breach of contract; *breach of the peace* (i.e., the public peace) is actionable; *breach of arrest*, offence of military officer under arrest in going beyond bounds assigned him.

**Breaching Tower**, in mediæval warfare, was a movable structure on wheels, moved up to attack a city or fortress; several stories; fabric thickly covered by hides as protection against fire; sometimes called a *beffroi* or a *sow*.

**Bread** is baked dough, which is formed by mixing white wheat flour or whole wheatmeal with water, a little salt, and some yeast. The yeast is added with the object of promoting fermentation and the production of

carbonic acid gas (carbon dioxide), and thus causing the dough to rise and to form in the bread its particularly spongy or honey-comb texture. This makes it both more palatable and more digestible. It has also been the custom of bakers in the past to add potatoes to bread, chiefly with the object of reducing the cost of production. Home-made bread, which in the hands of a competent maker is superior to average baker's bread, is sometimes made with the addition of separated milk, which adds to its flavour and nutritive value. The bread chiefly consumed in European countries, with the exception of their capitals and cities, is usually made of rye flour or rye, mixed with wheatmeal, and this accounts for the darkness of its colour. In this country there are many special brands of bread which are made with the addition of the germ of the wheat, malted bran, or malt. It is seldom that wholemeal or otherwise brown bread is so good in texture as white bread. This is partly owing to the presence of the fibrous materials and partly to its deficiency in gluten, which forms too thin a layer in the walls of the cells to resist sufficiently the pressure of the gas evolved in fermentation. In baking, bread is subjected to a temperature of about 300° F. After baking, a loaf commences

to lose weight, small loaves losing from 8 to 10 per cent. in a couple of days. The crust of bread, which is more abundant on the cottage than on the tinned loaf, is 50 per cent. richer than the crumb, while it contains approximately 80 per cent. of nutritious food. The formation of crust is owing to the conversion of some of the starch into caramel and dextrin, and it is, therefore, like toast, more soluble, and consequently more digestible, than the crumb, an average sample of which contains 48 per cent. of nutritive matter. The proteids in the crumb are much inferior in quantity to those in the crust of bread. Fine white bread is made with flour which is milled to the extent of approximately 66 per cent. of the wheat grain, whereas wholemeal consists of 90 to 95 per cent. The weight of a loaf, and therefore its composition, which varies considerably, depends upon the strength of the flour in its capacity to absorb water; the quantity of water employed in making the dough; the size and shape of the loaf, which governs the proportion of crust; and lastly upon the temperature and length of time during which bread is baked.

The approximate composition of bread is as follows, the range embracing numerous examples of white and patent breads:

|                       | Carbohydrates,<br>chiefly starch<br>and sugar. | Fat.    | Protein. |
|-----------------------|--|---------|----------|
| White bread . . . .   | 50-54  | 1.0-1.5 | 6.5-7.5  |
| Wholemeal bread . . . | 43-49  | 1.2-1.7 | 6.4-8.0  |
| Patent breads . . . . | 42.5-54  | 1.5-1.7 | 6.4-9.7  |



Although there are differences of opinion as to the relative merits of white and wholemeal bread which cannot be measured solely on the basis of analysis, there is strong evidence that the latter, owing to the stimulus which its fibrous contents give to the peristaltic action of the intestines, is especially valuable in maintaining health and vigour.

**Breadalbane**, dist., N.W. Perthshire, Scotland (56° 30' N., 4° 15' W.), comprising many lofty peaks of the Grampians (highest, Ben Lawers, 3,984 ft.) and lochs.

**Breadalbane**, EARLS AND MARQUESSES OF, noble Scot. family, descended from the Glenorchy branch of the Campbells. (1) JOHN CAMPBELL (1635–1716), cr. 1st Earl in 1681; responsible with Sir John Dalrymple for Glencoe massacre (1692). (2) JOHN CAMPBELL, 2nd Marquess, took active interest in Disruption, and was influential in the Free Church. On his death marquessate became extinct; revived (1885) in favour of (3) GAVIN CAMPBELL (1851– ), 7th Earl; keeper of privy seal of Scotland since 1907; Lord High Commissioner to General Assembly of Church of Scotland (1893–5). Owns about 200,000 ac.

**Bread-fruit**, fruit of *Artocarpus incisa*, tree growing in E. Indies and Pacific islands; in size and shape like melon, containing white nutritious juice; cut in slices and roasted for food. Another species, *A. integrifolia*, furnishes the jack-fruit, eaten, also its roasted seeds, in Ceylon and S. India.

**Brea Gum**, product of leguminous tree (S. America) *Cæsal-*

*pina præcox*; it strongly resembles gum arabic.

**Break Joint**, overlapping of similar pieces of timber, stone, or iron, so that joints shall not occur in the same line in any two contiguous courses or strakes, thus producing weakness. In brick-laying and masonry it is called 'breaking bond.'

**Breakspear**, NICHOLAS. See ADRIAN (POPES).

**Breakwater**, a barrier built to shelter a harbour or roadstead from the violence of the waves, thus providing safe anchorage for ships. Breakwaters may be in the form of piers having one end connected with the land, or they may be placed across the entrance to a bay and completely isolated. They must be of the strongest possible construction in order to withstand the pressure of the waves, which has been known to attain a force equivalent to 3½ tons per sq. foot, as registered by the dynamometer. Huge blocks of masonry have been literally quarried out of the face of breakwaters, and masses of concrete weighing 2,000 tons have been moved from their foundations. The foundation of a breakwater usually consists of a mound of rough stones, or rubble. The superstructure may consist of a masonry wall built of comparatively small blocks and faced with granite, or it may be formed of huge concrete blocks weighing 50 or more tons.

One great drawback to a wall of small blocks is that during its construction the unfinished end is very liable to be shattered by storms. The concrete now in general use consists of a mixture

of Portland cement and broken stone and sand. The blocks are made by pouring the mixture into boxes with movable sides, the sides being removed when the concrete sets. The blocks are laid in position by steam cranes, the largest of which are capable of laying 50-ton blocks anywhere within a radius of 100 ft. The blocks are brought to the required position in barges, and as they are lowered by the crane are accurately adjusted by divers. In the detached mole at Gibraltar a steel caisson was sunk on the rubble foundation and filled with about 9,000 tons of concrete, the breakwater being completed with concrete blocks. The foundation of a breakwater may also be formed of large bags of liquid concrete, which rapidly hardens under water. Blocks are sometimes formed on the spot where they are to remain by depositing the concrete liquid in cases. Additional blocks may be deposited round the foot of a breakwater, forming what is called the 'apron.'

**Bréal**, MICHEL JULES ALFRED (1832-1915), Fr. philologist and educationist; founder of modern Fr. linguistic studies; author of mythological studies, *Hercule et Cacus*, etc.; of works on philology, *Essai de Semantique*, *Les Tables Engubines*, etc.; and of a series of educational works, including Latin dictionary and grammar.

**Bream**. See CARPS.

**Breast**, mamma or milk gland, rudimentary in male; mammary gland consists of glandular tissue arranged in branching processes supported by fatty fibrous tissue, and connected with ducts which unite, forming larger channels.

Breast subject to various diseases, especially carcinoma.

**Breathing**. See RESPIRATORY SYSTEM.

**Brébeuf**, JEAN DE (1593-1649), Fr. Jesuit missionary; settled amongst Hurons; trans. Ledesma's catechism into Huron, and wrote account of his life (*Relations*, 1625 and 1636); martyred by Hurons; suffered terrible tortures.

**Breccia**, rock composed of angular fragments united by matrix or cement. Cliff débris is sometimes consolidated into breccia; also the angular fragments shot out from volcanoes.

**Brechin**, royal burgh, Forfarshire, Scotland (56° 41' N., 2° 39' W.); osnaburgs, brown linen, and sailcloth; spinning, bleaching, distilling, etc.; castle, seat of Earl of Dalhousie; 12th cent. cathedral (now parish church); round tower (c. 1000). Birthplace of Dr. Thomas Guthrie. Pop. 8,400.

**Brecknock**. See BRECON.

**Brecon**, or BRECKNOCK, mrkt. tn. and co. tn., Breconshire, S. Wales (51° 57' N., 3° 23' W.), at the confluence of Honddu and Usk; Christ Coll. (public school); priory church of St. John; remains of castle; lime; flannels, brewing, and tanning; connected with Bristol Channel by canal; birthplace of Mrs. Siddons and Charles Kemble. Pop. 5,900.

**Breconshire**, or BRECKNOCKSHIRE, inland co., S. Wales (52° N., 3° 30' W.), bounded by Radnor, Hereford, Monmouth, Glamorgan, Carmarthen, Cardigan; co. tn., Brecon; surface mountainous; highest peak, Pen-y-Fan; chief rivers, Wye, Usk; traversed by Brecon and Aber-

gavenny Canal; has several lakes and mineral springs. Breconshire was occupied by Romans, after whose departure it belonged to Welsh princes till late 11th cent.; traces of Roman camps and roads remain. Breconshire produces wheat, oats, barley; timber, dairy produce; cattle and sheep raised; manufactures include woollens, leather, iron goods; minerals include coal, iron, limestone. Area, 726 sq. m.; pop. 59,300.

**Breda, tn., N. Brabant, Netherlands** (51° 36' N., 4° 47' E.); Gothic reformed church contains burial monuments of early counts; old castle was surrendered to Spaniards (1625); taken by Dutch (1590, 1637), and by the French in 1793 and 1795; Compromise of Breda, protest against Span. rule, signed (1566); Declaration of Breda by Charles II. of England (1660); Peace of Breda (1667) between England and Holland. Neighbourhood can be inundated. Pop. 27,400.

**Brédikhine, THEODOR ALEXANDROVITCH** (1831-1904), Russian astronomer; director of Pultowa Observatory (1890); researches in cometary astron.; suggested the most comprehensive classification of comets.

**Bredow, tn., Pomerania, Prussia** (53° 28' N., 14° 37' E.), suburb of Stettin; sugar and cement; ship-building; from yards of Vulcan works big Hamburg-American liners launched (*Imperator*, 1913).

**Bredow, GOTTFRIED GABRIEL** (1773-1814), Ger. historian; prof. at Breslau (1811). His *Merkwürdige Begebenheiten aus der Weltgeschichte* went through some 40 editions.

**Bree, MATTIAS IGNATIUS VAN** (1773-1839), Flemish painter of historical and allegorical subjects; works in town hall, Leyden, and at Antwerp; he influenced the later Flem. painters.

**Breeding**, a term particularly applied to man's control over the pairing of domesticated and semi-domesticated animals, the practical result being the establishment of many breeds or sub-varieties of sheep, cattle, goats, pigs, camels, alpacas, horses, asses, dogs, cats, fowls, and pigeons. Breeder selects animal with germinal variation, and pairs it with another like itself; if he succeeds in rearing a progeny which exhibit the desired characteristic of the selected parent or parents, he can continue more boldly along the same lines; by intercrossing with quite different strains the desired character gradually comes to be possessed more or less markedly by a large number of forms and transmissible by them. This general theory, now largely influenced by MENDELISM, and the important point for the breeder to discover, is not the bodily expression of characters seen in a particular animal, but rather the germinal constitution of the individual. In other words, new emphasis is laid on pedigree and progeny. Since the rediscovery of Mendel's methods and results at the beginning of the 20th cent., there has been rapid progress in the elucidation of scientific principles by which the practice of breeding, whether among plants or animals, can be made surer, quicker, and more adventurous.

Wilson, *The Principles of Stock-breeding* (1912).

**Breeze-flies.** See GAD-FLIES.

**Breezes, LAND AND SEA,** purely local; met with in most perfect form in hot countries; the breeze from sea sets in towards noon and dies away towards sunset; about midnight breeze begins to blow in reverse direction. Air over land, expanded by heat, rises, whereupon upper strata flow off towards cooler sea and thereby produce increase of barometric pressure at some distance from shore; this causes sea breeze. Contrary action during night produces land breeze.

**Bregenz, tn.,** summer resort, Austria (47° 31' N., 90° 45' E.), at s.e. angle of Lake Constance; silk industry. Pop. 8,500.

**Brehm, CHRISTIAN LUDWIG** (1787-1864), Ger. ornithologist; made vast collection of European birds; father of noted naturalist, ALFRED EDMUND (1829-84), whose *Illustriertes Thierleben* ('Animal Life') was one of most valuable works of its time.

**Brehon Laws,** the Eng. name given to the *Feineachas*, or anc. laws of Ireland. The various MSS. from which these are derived are all more or less imperfect, and their publication in six vols., under the title of *The Ancient Laws of Ireland* (1865-1901), was the work of a royal commission including many distinguished scholars; of great antiquity; said to have strong resemblance to Germanic codes.

Ginnell's *Brehon Laws* (1894); Joyce's *Social History of Ancient Ireland* (1903).

**Breitenfeld, vil.,** Saxony (51° 24' N., 12° 22' E.); scene of Tilly's defeat by Gustavus Adolphus (1631), and of another Swedish

victory (1642); part of battlefield of Leipzig (1813).

**Breithaupt, JOHANN AUGUST FRIEDRICH** (1791-1873), Ger. mineralogist; opened up coalfields of Zwickau, Saxony; discovered amblygonite, heulandite, monazite, and orthoclase; wrote many works on mineralogy.

**Breitinger, JOHANN JAKOB** (1701-76), Ger.-Swiss scholar and man of letters; pub. ed. of the Septuagint (4 vols. 1730-2); protagonist of literary feud between Bodmer and Gottsched.

**Breitkopf,** noted firm of Ger. printers and publishers, founded 1664, and known as Breitkopf and Härtel since 1795.

**Breitmann, HANS.** See LELAND, CHARLES GODFREY.

**Bremen.** (1) Free state of Ger. commonwealth, in basin of lower Weser; area, 99 sq. m., cattle largely reared; market gardening and fishing. Pop. 295,700. (2) City of Germany, cap. of above state, a Hanseatic town on both banks of Weser (53° 5' N., 8° 49' E.); one of most thriving ports of Germany (in 1914, 1,416,800 tons shipping); headquarters of Norddeutscher Lloyd; jute spinning, woollen and cotton goods, shipbuilding; iron foundries, rope making, petroleum refining, distilling, brewing, and sugar refining; outport, BREMERHAVEN; river deepened to Bremen within recent years; great cotton market of Germany; large trade in tobacco; emigration centre; Great War put complete stop to trade; revolution just before Armistice, and workers' and soldiers' council set up; notable buildings are cathedral, town hall, church of St. Ansgarius, museum, observatory,

famous wine-cellar below town hall. Pop. 255,000.

**Bremer, FREDRIKA** (1801-65), Swed. novelist; her earlier stories were of a simple, idyllic character, and were trans. into English by Mary Howitt; later she devoted her attention to the emancipation of women and to philanthropic work, and her subsequent novels, *Hertha* (1856) and *Far och Dollor* (1853, Eng. trans.), were written with propagandist intent.

**Bremerhaven**, outport of Bremen (38 m. N.), Germany, on r. bk. of Weser (53° 32' N., 8° 34' E.): founded (1827) by Bremen; commodious and well-equipped harbour; docks and yards of Norddeutscher Lloyd. Pop. 24,300.

**Brendan**, St. See BRANDAN.

**Brennan, LOUIS** (1852- ), Irish engineer; inventor of torpedo named after him and of gyroscopic mono-rail; superintendent of the government Brennan torpedo factory (1887-96); consulting engineer to same (1896-1907).

**Brenner Pass**, lowest (4,485 ft.) of all the great Alpine passes; shortest route between Central and S. Germany and Italy; carriage road made (1772); railway, one of first over high Alps, constructed in 1864-7.

**Brennus**, name of two Celtic chieftains of Gaul, the first of whom burned Rome (390 B.C.); second invaded Greece (280 B.C.).

**Brent, CHARLES HENRY** (1862- ), Amer. Prot. Epis. bishop; declined bishopric of Washington (1908); preached in Westminster Abbey (Feb. 1917), and in St. Paul's before king and queen on April 20 (celebration of entry of U.S. into the Great War). Has written devotional works.

**Brenta**, riv., N. Italy, rises Tyrol, enters Adriatic Sea (45° 13' N., 12° 17' E.); length, 106 m.; half navigable.

**Brentano, KLEMENS** (1778-1842), Ger. poet and novelist; brother of Goethe's friend, Bettina von Arnim; author of *Godwi*, a romance, *Ponce de Leon*, a drama, and numerous other novels and dramas; also of some charming short stories, which have been trans. into English.

**Brentford**, mrkt. tn., Middlesex, England (51° 29' N., 0° 18' W.); large market; soap, distilling, rubber industry, and iron foundries; market gardens and fruit farms in vicinity. Many historical associations; its 'two kings' figure in Buckingham's *Rehearsal* and in Cowper's *Task*.

**Brent Goose**. See under DUCK FAMILY.

**Brentwood**, mrkt. tn., Essex, England (51° 37' N., 0° 18' E.); free grammar school; county lunatic asylum. Pop. 4,900.

**Brescia**. (1) Prov. (area, 1,806 sq. m.), N. Italy, between Tyrol, Lake Garda, and riv. Oglio; rice, maize, wine, and fruits; silk, machinery, and leather. Pop. 596,000. (2) Tn., cap. of above, 9 m. from Lake Garda; 10th cent. cathedral and new cathedral (1604-1825) of white marble; magnificent town hall; seat of Brescian school of painting (16th cent.). Arnold of Brescia (executed 1155), a pioneer Church reformer. Woollens, linens, silks, iron and steel wares. Pop. 89,600.

**Breshko-Breshkovskaya, MADAME**, Russian revolutionary; was condemned to penal servitude for life (1874): after twenty years set free, but taking up Socialistic

doctrines was sent to Siberia; freed March 1917, and known as 'grandmother of the revolution.'

**Breslau**, tn., Silesia, Prussia, on the Oder (51° 6' N., 17° 1' E.); third city of Prussia, the first commercially and educationally; old town contains cathedral (begun 1148) and many old and imposing churches; town hall (14th cent.); univ. (had 2,300 students before the Great War); palace of former kings of Prussia; Silesian Museum of Fine Arts; many statues, and seventy-two public fountains; machinery, railway carriages, musical instruments, glass, beet sugar, chemical manures. Became Prussian (1741) on conquest of Silesia. Pop. 512,000.

**Breslau**. See GOEBEN.

**Bressay**, isl. of Shetland group (60° 8' N., 1° 5' W.), 1 m. E. of Lerwick on Mainland; 6 m. long by 3 m. broad; slate and flagstones quarried; fine stalactite cave. Pop. c. 650.

**Brest**, chief Fr. naval base and arsenal on Atlantic (48° 23' N., 4° 31' W.), on riv. Penfeld; suburb Recouvrance, on w. side; about 9,000 persons employed in arsenal; candles, cork, hats, ropes, soap, and leather; exports vegetables, strawberries, and superphosphates; harbour capacious opening to sea by the fortified channel, the Goulet; sea approaches studded with rocks and islands; held by the English (1342-97); sea-fights in 1512, 1513, 1594; Brit. landing force was disastrously defeated in 1694; blockaded by Hawke and Jervis. Since Anglo-French Entente (1905) Brest as a naval station is of secondary importance.

Large numbers of Amer. soldiers were landed in 1918.

**Brest-Litovsk**, tn. and fortress, Grodno government, Poland (52° 15' N., 23° 42' E.), on r. bk. of Bug; great ry. centre; added to Russia (1795); grain, wood, cattle, tobacco; in early part of Great War base of Russian operations in Poland; last of 'Polish Quadrilateral' to be evacuated (1915); entered by Germans Aug. 25, 1915; became headquarters of Prince Leopold of Bavaria; on Dec. 3, 1917, scene of peace discussions; after long delays Treaty of Brest-Litovsk signed on March 3, 1918: Russia to pay £300,000,000 in money and £50,000,000 in goods to Central Powers; Finland, Esthonia, Lithuania, Kurland, Poland, and Ukraina to be set up as independent under protection of Germany; economic clauses placed whole of Russian commerce and produce under control of Germany. By Peace Treaty of June 1919 Germany forced by Allies to cancel its iniquitous provisions.

**Bretagne**. See BRITTANY.

**Brethren**, APOSTOLIC, another name for APOSTOLICI.

**Brethren of the Common Life**, members of brotherhoods (and sisterhoods) founded by Gerhard Groot (1340-84) of Deventer, Holland; intended to form link between the monks and the people; not bound by usual vows, but practising monastic virtues while earning their own living; Thomas à Kempis attended the school at Deventer, and Erasmus was its most distinguished pupil.

**Brétigny**, vil., Eure-et-Loir,

France (48° 22' N., 1° 36' E.); scene of treaty between England and France (May 8, 1360), whereby Edward III. gave up claim to Fr. throne and most Eng. possessions in France, except Gascony, Guienne, etc.; also agreed to release King John on payment of 3,000,000 crowns.

**Bretislav I.** (r. 1039–55), Czech prince, restored Moravia to the Bohemian crown; after death of father became King of Bohemia, and conquered Silesia and western districts of Poland; Germans invaded and forced him to give up most of his possessions; later years peaceful.

**Breton, CAPE.** See CAPE BRETON.

**Breton, JULES ADOLPHE AIMÉ LOUIS** (1827–1906), Fr. artist; commenced as a painter of historical subjects, but cast aside the academic traditions, and secured a high reputation by his landscapes and rustic scenes. Finest examples are *Return of the Gleaners*, *St. John's Feast*, *Potato Harvest*, *The Fountain*.

**Breton, NICHOLAS** (c. 1545–1626), Eng. poet and novelist; in verse, *A Flourish upon Fancie*, *The Passionate Shepherd*, etc.; in prose, *A Mad World, my Masters*, and *Grimello's Fortunes*. He wrote some charming lyrics, and stories full of quaint beauty.

**Breton de los Herreros, MANUEL** (1796–1873), Spanish dramatist; wrote upwards of 300 plays, amongst the best known of which are *A Madrid me vuelvo* (1818) and *Un Novio para la Niña* (1836).

**Breton Language.** See CELTS.

**Bretschneider, KARL GOTTLIEB** (1776–1848), Ger. theologian, be-

came superintendent-general at Gotha (1816); wrote work propounding objections to Johannine authorship of the gospel and epistles. His lasting memorial is his edition of Melanchthon (1834).

**Brett, JOHN** (1830–1902), Brit. painter; chief exponent of pre-Raphaelitism as applied to landscapes and seascapes; his *Stonebreaker* greatly admired by Ruskin; famous for accuracy of detail; A.R.A. in 1881. His *Britannia's Realm* (1880) was purchased by the Chantrey Trustees (Tate Gallery).

**Brettes, LOUIS JOSEPH, VICOMTE DE**, Fr. traveller, visited N.W. coast of Africa and Algeria (1877–83); explored Gran Chaco (1886–9), Sierra Nevada de Santa Marta in Colombia (1890–1), province of Magdalena (1892–3).

**Bretts and Scots, LAWS OF THE**, Celtic code in Scotland repealed by Edward I. (1305) because not sufficiently severe. Brett is supposed to have meant Brehon.

**Bretwalda**, name meaning 'lord of Britain,' given to the chief of the petty kings of the Saxon Heptarchy, mention of which is found in the *Anglo-Saxon Chronicle*.

**Breughel (or BRUEGHEL), PIETER** (1525–69), noted Dutch genre painter, whose chief works are *The Village Fair* and *The Shepherd*, both in Vienna. His son, **PIETER THE YOUNGER** (1564–1638), was less talented in same line; younger son, **JAN** (1568–1625), was famous landscape painter and engraver, and father of **JAN THE YOUNGER** (1601–78), painter of same school.

**Breukelen** ('marsh'), vil.,

Netherlands (52° 12' N., 5° 1' E.), gave its name to BROOKLYN.

**Breul, KARL HERMANN** (1860– ), Ger. scholar and philologist; univ. lecturer in German at Cambridge (1884) and Schröder prof. (1910); founded English Goethe Society; has written on teaching of modern languages.

**Breun, JEAN E., COMTE DE L'HÔPITAL** (1862– ), portrait painter; gold medal Paris Salon (1892) for *Cold Steel*; famous for sound technique and truthful rendering; has painted Princess Victoria, Sir Redvers Buller, W. G. Grace, Madame Patti, etc.

**Breve**, musical measurement; in mediæval notations, half or third of long note; now written  $\text{C} \text{ } \text{||}$  = 4 minims; *semibreve* = 2 minims; also mediæval Lat. term for writ.

**Brevent**, s.w. prolongation of the Aiguilles Rouges (45° 35'–45° 55' N., 6° 47' E.), N.W. of Chamonix; best view-point for Mont Blanc range.

**Brevet**, in Brit. army, form of promotion of an officer above his regimental rank for meritorious service in the field, or otherwise of an exceptional character; highest brevet rank is that of colonel.

**Breviary**, the 'prayer book' of the R.C. Church, contains psalms, hymns, portions of Scripture, and commentaries from the Fathers for every day. All priests (deacons and subdeacons) and monks are obliged to say aloud in public or private the daily portion. It is separate from the Missal (see *MISSAL*), which contains everything that pertains to the Eucharist. In the primitive Church the Bible,

especially the Psalms, formed the chief service book, and the Breviary, somewhat in its present form, only came into being in the 11th cent. The Roman Breviary is now used universally in the R.C. Church, except in Toledo, where the Mozarabic is used, and Milan, which retains the Ambrosian, and in certain religious orders (e.g., Dominican).

**Brevier**. See *TYPES*.

**Brevoortia**. See *HERRING*.

**Brewer, DAVID JOSIAH** (1837–1910), Amer. jurist; member of Venezuela Boundary Commission (1896); Brit.-Venezuelan Arbitration Tribunal (1899); president of St. Louis International Congress of Lawyers and Jurists (1904); author of *The United States a Christian Nation* (1905).

**Brewer, EBENEZER COBHAM** (1810–97), author of *Dictionary of Phrase and Fable*, *The Reader's Handbook*, etc.

**Brewer, THOMAS MAYO** (1814–80), Amer. naturalist; edited Wilson's *Birds of N. America* (1839), and began publication of *History of N. Amer. Birds* (1874).

**Brewing**, the production of beer, involves the conversion of barley into malt, followed by the brewing proper. The nature of the brewing water affects considerably the quality of the resulting beer, the available water supply largely determining the geographical positions of the great brewing centres.

**MALTING**.—A barley grain contains within its husk and skin the germ or embryo, and the endosperm or food material consisting of starch-containing and aleurone (nitrogenous) cells. Malting consists of four processes—



(1) *Screening*, by which dust and dirt and small or damaged corns are removed.

(2) *Steeping*: thoroughly soaking in water at 50–55° F. for about fifty hours to arouse the dormant vitality of the grain. The barley is added in a thin stream to the water, which is changed several times to avoid putrefaction of dissolved matter. A little bisulphite of lime is sometimes added for the same purpose. The steeped grain should be thoroughly wetted and softened throughout, and should leave the husk by gentle pressure; its bulk and weight are increased, but cane sugar, gum, diastase, colouring and mineral matter, and about half the soluble nitrogenous matter have been removed.

(3) *Germination*: (a) The steeped grain is *couché*—i.e., piled on the cement floor of the malthouse to a depth of 12–14 in., and left there for twenty-four hours, being turned every five or six hours. Growth commences, accompanied by respiration; hence ventilation is necessary; the temperature rises to 60–63° F., and rootlets appear (*chitting*). (b) The grain is spread out, and turned day by day on the floor (*flooring*), so that the whole is aerated, the depth being regulated by the temperature. Growth and production of diastase continue for eight or nine days. (c) About the fifth day the grain will be getting too dry, and water is sprayed over it (*sprinkling*). (d) At about the ninth day, when sufficient growth has taken place, the malt remains for twenty-four hours unturned. Thus the heat ac-

cumulates, the grain dries, and growth is arrested (*withering*). These processes are carried out more efficiently by pneumatic malting, in revolving drums through which air at a suitable temperature, and saturated with moisture, is passed. The product of the whole germination process is 'green malt.' During germination of barley and its conversion into malt, the chemical and physiological changes are complex and not yet completely elucidated. The following changes occur: (a) the cellulose cell walls enclosing the starch granules are dissolved or softened by the enzyme *cytase*; (b) growth of the enzyme *diastase* necessary for the subsequent conversion of insoluble starch into soluble sugar (maltose); (c) proteolytic enzymes degrade complex proteins into simpler forms, such as peptones. As a result of these reactions, a hard, vitreous barley is transformed into a soft, friable malt.

(4) *Drying* is carried out in kilns, containing two or more floors, and heated by a fire beneath. The malt is dried gradually, starting at 100° F., cured for six hours at 190–230° F., and stored in a dry place. For black beers malt is roasted to a chocolate colour.

BREWING consists in making beer from malt, with the addition of hops, etc. The infusion system of brewing, described below, is used in this country; the decoction method is worked on Continent.

*Operations*.—The *grinding of malt* should be done in a grist mill the day before use, fine enough to yield the maximum extract without clogging the

mash-tun. *Mashing* consists in extracting the grist with water at about 145–155° F. in a cylindrical tun of wood, copper, or iron, with mechanical stirrer and false bottom. During mashing, diastase converts starch into maltose (shown by absence of blue colour with iodine):  $2(C_6H_{10}O_5)_n + nH_2O = nC_{12}H_{22}O_{11}$ . The sweet wort produced runs off through the false bottom into the copper, and the residue is *sparged*—i.e., sprayed with hot water to avoid waste. What remains is brewers' grains, used for cattle food. *Boiling and hopping*: the wort is boiled in the copper to concentrate it, and destroy bacteria and diastase. Hops (catkins of *Humulus lupulus*, containing tannin, hop oil, alkaloids, and resin) are added meanwhile to confer aroma (by the oil), to aid precipitation of albuminoids (by tannin), and act as preservative (antiseptic resin). After two hours the wort is separated from hops and sediment in the 'hop back.' *Cooling and refrigeration*: the wort is cooled to 60° F., and brought

into the fermenting vat in contact with sterilized air.

*Fermentation*.—*Yeast*, a unicellular micro-organism, should be carefully chosen and cultivated, and be not more than a week old. Perfectly pure yeast may be grown from a single cell. The enzyme maltase in yeast hydrolyzes maltose thus:  $C_{12}H_{22}O_{11} + H_2O = 2C_6H_{12}O_6$  (glucose), and zymase ferments glucose, the chief reaction being:  $C_6H_{12}O_6 = 2C_2H_5O + 2CO_2$ . All the yeast is mixed with a little of the wort at 65–75° F. (*pitching*) to induce rapid fermentation in the vat; then the rest is quickly introduced. The temperature, which must not rise above 70°, is regulated by cold water circulating through coils or *attemperators*. The liquor becomes covered first with a frothy head due to carbon dioxide, then with a yeasty head. The yeast is skimmed from the beer in the vat, after about forty-eight hours, or removed by settling. The liquor is conveyed through leather or indiarubber hose to the casks (*racking*), and

COMPOSITION OF BEERS.

|  | Burton<br>Pale Ale. | Dublin<br>XXX<br>Stout. | Munich<br>Lager<br>Beer. |
|--|---------------------|-------------------------|--------------------------|
| Maltose . . . . .                                | 1.75                | 5.35                    | 1.57                     |
| Dextrin . . . . .                                | 2.48                | 2.09                    | 3.15                     |
| Proteins (nitrogenous) . . . . .                 | 0.21                | 0.43                    | 0.40                     |
| Lactic and succinic acids . . . . .              | 0.14                | 0.25                    | 0.14                     |
| Ash, colouring matter, and hop extract . . . . . | 0.55                | 1.40                    | 1.82                     |
| Total solid matter . . . . .                     | 5.13                | 9.52                    | 7.08                     |
| Acetic acid . . . . .                            | 0.02                | 0.04                    | 0.01                     |
| Alcohol . . . . .                                | 5.37                | 6.78                    | 4.75                     |
| Water . . . . .                                  | 89.48               | 83.66                   | 88.16                    |

yeast may afterwards be extruded from the bung holes by continued fermentation. Fresh hops are subsequently added to impart aroma, and isinglass dissolved in sulphurous acid for clarification (*fining*).

*Beer* is a fermented liquor brewed from malt or malt substitute, flavoured with hops or other bitter. *Ale* is light-coloured, and rather strong in alcohol. *Porter* and *stout* are dark-coloured on account of caramel derived from charred malt; they contain much sugar and extract, and stout much alcohol. *Lager beer* is low in alcohol, and rather high in extract.

Sykes and Ling, *The Principles and Practice of Brewing* (1907); Chapman, *Brewing* (1912); Baker, *The Brewing Industry*.

**Brewster, SIR DAVID** (1781–1868), Scot. natural philosopher; principal of Edinburgh Univ. (1859); winner of the Copley, Rumford, and Royal medals; was one of the founders of the Brit. Association, of which he was president (1849); invented the kaleidoscope, and made many discoveries in science of optics; ed. the *Edinburgh Encyclopædia*, and wrote *Life of Newton, Martyrs of Science*, etc.

**Brewster, WILLIAM** (c. 1560–1644), one of 'Pilgrim Fathers'; his influence was second only to that of Bradford.

**Breymann, ADOLF** (1839–78), Ger. sculptor; produced two angel figures for Prince Consort's mausoleum at Windsor, and for Göttingen a monument commemorative of victory.

**Brezova, HUNGARY.** See under ZOLYOM-BREZO.

**Brialmont, HENRI ALEXIS** (1821–1903), Belgian military engineer; in 1859 began works for defence of Belgium; formed great entrenched camp at Antwerp to which Belgian army could retire in last resort (see ANTWERP); also proposed conversion of Liège and Namur into up-to-date fortresses defended by ring of forts; planned defence of Bukharest, and returned to complete scheme for Liège and Namur; retired 1887. Wrote elaborate work on fortification (*Les Régions fortifiées*, 1890) in which he maintained that concrete and armoured forts were proof against high-explosive shells, a thesis proved false by experiences of Liège, Namur, and Antwerp in 1914. Probably fortress of the future will consist of field entrenchments and not of permanent works as erected by Brialmont.

**Brian** (926–1014), King of Ireland, 'the Alfred of Irish history'; defeated Dan. host at Clontarf (April 23, 1014), but was killed after the battle.

**Briançon**, tn. and fortress, Hautes-Alpes, S. France (44° 56' N., 6° 39' E.), at confluence of Durance and Guisane; highest town in France (4,335 ft.); single arch bridge over the Durance; besieged three months in 1815, but justified legend subsequently inscribed over its gates, 'Le passé répond de l'avenir'; silk, chalk, coal. Pop. 7,900.

**Briand, ARISTIDE** (1862– ), Fr. statesman; four times prime minister; in 1899 was an avowed Syndicalist, advocating general strike; entered the Chamber of Deputies in 1902; brought forward proposals for separation of

Church and State (became law 1905); as minister of public worship in Clemenceau's cabinet (1906-7) administered the new law with firmness and tact; as prime minister during Great War is credited with bringing Rumania into the struggle; again became prime minister (1921).

**Briansk**, tn., Orel government, Russia (53° 14' N., 34° 23' E.); cathedral; convent with tomb of Oleg; great ann. fair; tallow; saw and flour mills; Maltsov works; iron, machinery, glass, rope, cloth, oil. Pop. 24,000.

**Brianza**, dist., 'garden of Lombardy'; between the two southern arms of Lake Como, Italy; dotted over with country seats of the Milanese.

**Briare**, tn., Loiret, France (47° 38' N., 2° 45' E.), on r. bk. of Loire; Canal de Briare, first artificial waterway in France (1605-42). Pop. 4,600.

**Briareus**, or **ÆGÆON**, in class. myth., one of the three giant sons of Uranus and Gæa. These monsters had each fifty heads and a hundred arms.

**Bribery**, the offence of giving, or offering, any reward to a person holding a public office or exercising a public franchise, for the purpose of influencing his conduct in relation thereto or even as an acknowledgment of some favour already received. Penalties are provided in Customs Laws Consolidation Act (1876), Public Bodies Corrupt Practices Act (1889), and Inland Revenue Regulation Act (1890). For bribery at political elections, see **CORRUPT PRACTICES**. Bribery of jurymen is called **EMBRACERY**.

**Brice**, St. (d. 444), Bishop of

Tours; driven from see (430), but recalled seven years later. His day, Nov. 13, was that on which Ethelred the Unready massacred the Danes (1002).

**Brickfielders**, hot N. winds of the sirocco class, blowing most intensely in Australia Nov. to Jan.; temp. in Sydney known to rise to 107° F.; higher in Central Australia.

**Bricks**. The word 'brick' is derived from the Fr. word *brique*, meaning a piece, or fragment, and is the Eng. name given to a piece of worked and moulded clay, slightly over 9 in. in length by 4½ in. in width, and used for building purposes. Sun-baked bricks were in use amongst the anc. Egyptians, Assyrians, and Babylonians, and some of these are still to be seen in a perfect state of preservation. Kiln-baked bricks, however, mixed with chopped seeds or straw, were also employed in very early times by these peoples. They were also largely used by the Romans, and by them were introduced into England. After the withdrawal of the Romans brickmaking fell into disuse in England until the craft was re-introduced by the Flemings in the 13th cent. But it was not until the 15th cent. that bricks came again into any general use. Hampton Court is a fine example of Early English brick-building. Half-timbered houses, filled in with lath and plaster, still continued to be built, and it was not until well on in the reign of Charles II. that brick buildings became common.

The clay used in brickmaking is abundantly found in many

parts of the Brit. Isles, and the substance contains varying proportions of silica, alumina, iron, lime, and other salts. The clay is dug in autumn, left to weather until the spring, after which it is damped and worked with the spade, or ground in the pug-mill. The substance is then ready for moulding, which is done either by hand in a wooden or metal-faced mould, or by specially designed machinery. The bricks are then removed to the drying ground, or shed, where they are piled in open stacks which allow a free passage of air, and after about a week are ready for the baking process. This is done either in clamps or kilns. A clamp consists of a rectangular stack of dried bricks, provided with flues and fire-holes, in the latter of which fires are lighted, and all apertures having been stopped up, the completed brick is thus produced. The kiln is a conical brick fire-chamber, in which the 'green' bricks are placed. This is provided with a furnace, which is fully charged, and when well alight the mouth of the kiln is closed and the process of baking (generally about forty-eight hours) begins. Both clamps and kilns were used in very early times.

*Bricklaying* is the process of building with bricks. An English brick is about 9 in. in length, therefore a 9-in. wall is a one brick wall; 14 in., one and a half brick; 18 in., two brick, etc. A brick, the side of which is exposed, is called a 'stretcher'; where the end is outwards it is known as a 'header,' and from the distribution of these positions

of the bricks is derived the 'bond' or style of building. The two chief are 'English bond' and 'Flemish bond.' The former consists of alternate courses of 'stretchers' and 'headers'; the latter, of stretchers and headers laid alternately in each course. The English bond is considered the stronger, while the Flemish bond is more ornate. The mortar used in brick-setting is composed of a mixture of sand and lime, and before the bricks are laid it is usual to dip them in water, or to dash water over the pile as they lie near at hand for use; by this means a more perfect adhesion between the brick and the mortar is gained.

Handbooks on *Building Construction*, by Henry Adams and by E. F. Mitchell.

**Bride**, BRIDEGROOM, and BRIDAL. See MARRIAGE.

**Bride**, St. See BRIDGET, St.

**Bridewell**, district s. of Fleet Street, London; also a celebrated prison, demolished in 1864.

**Bridge**, card game, a development of whist, variously reputed to be of Dutch, Russian, or Turk. origin. Introduced into Britain first at the Portland Club in 1894, it has since increased enormously in popularity. Four persons take part in the game, two being partners against the other two, an ordinary pack of cards being used. The dealer decides trumps ('no trumps' is a possible declaration) after the players have examined the cards, or he may leave the declaration to his partner, who *must* then declare. This partner does not play his hand, which is exposed on the table as a 'dummy' hand, and played, in

addition to his own, by the dealer. The strength of the cards in making tricks, and the general scheme of play, is the same as in whist.

The value of each trick won, over six, depends on the trumps declared, and is: in no trumps 12, hearts 8, diamonds 6, clubs 4, spades 2. After the declaration of trumps the opponents may double the value of the tricks, when the first pair may redouble, and so on. The partners who first score 30 points win a *game*, and those who first win two games win a *rubber*, a rubber counting 100. If one side wins all the tricks it scores 40 points, *grand slam*; if it wins 12 tricks, 20 points, *little slam*. Points are also given for 'honours,' which are ace, king, queen, knave, ten, in a suit declaration, and aces in no trump, and for *chicane*, the case when a player has no trump card in his hand. For honours the scoring is somewhat more complicated; but these points do not count towards winning a game. The total score of each side includes the points for tricks, rubbers, honours, grand slam, etc., all added together.

*Auction Bridge*, allied to 'nap,' is a popular variety of the above game, introduced at the Bath Club in 1907, and differing from bridge in the following respects. The dealer may pass or declare to win at least one odd trick in a suit which he names. Each player in turn may 'pass' or over-call by declaring more tricks in the same or a lower suit or as many tricks in a higher suit as will amount to a higher score. Where scores would be equal, the

larger number of tricks in the lower suit has the preference. The call may be doubled and redoubled, but this still leaves the call with the original declarant. When the call has been settled, the partners whose call is the one to be played act as if they had held the deal at ordinary bridge, but the one who first called the suit acts as if he had been dealer and plays the hand. Scoring depends upon the number of tricks won or lost and on the amount of doubling and redoubling.

Bladworth, *Laws and Principles of Bridge and Auction Bridge*; Dalton, *Auction Bridge up to Date*; Elwell, *Practical Bridge*; Foster, *Bridge Tactics and Auction Bridge*; Hellespont, *Laws and Principles of Bridge and Saturday Auction Bridge*.

**Bridge**, SIR CYPRIAN ARTHUR GEORGE (1839— ), Brit. admiral; served in the Crimean War, Indian Mutiny, and on Burmese frontier; commander-in-chief on Australian station (1895-8), China station (1901-4); inquired into Dogger Bank incident (Oct. 1904); has written on naval warfare, sea power, and pub. *Some Recollections* (1918); one of commissioners to inquire into the conduct of the Mesopotamian campaign.

**Bridge**, SIR FREDERICK (1844— ), Eng. musician and composer; organist at Westminster Abbey (1875-1919); directed music at coronation of Edward VII. and King George; pub. account of career, *A Westminster Pilgrim* (1919).

**Bridgehead**, fortification, either temporary or permanent, protecting exit from a bridge on

farther bank: example, Rhine fortresses; must secure space sufficient for deployment of fighting forces after crossing bridge; *Fr tête de pont*; in open warfare term often applied to ground held by force on enemy's side of river crossing to cover deployment of troops on farther bank.

**Bridge.ian**, SIR FRANCIS (1848- ), Brit. admiral; commander-in-chief of the Home Fleet (1907-9 and 1911); lord of the Admiralty (1910-11); first sea lord (1911).

**Bridgend**, mrkt. tn., Glamorganshire, Wales ( $51^{\circ} 31' \text{ N.}$ ,  $3^{\circ} 34' \text{ W.}$ ); ironworks, stone quarries, and coal mines. Pop. 6,000.

**Bridge of Allan**, tn., Stirlingshire, Scotland ( $56^{\circ} 9' \text{ N.}$ ;  $3^{\circ} 57' \text{ W.}$ ), on Allan Water; mineral springs; inland resort and residential place. Pop. 3,100.

**Bridge of Sighs**. See VENICE.

**Bridge of Weir**, tn., Renfrewshire, Scotland ( $55^{\circ} 52' \text{ N.}$ ,  $4^{\circ} 35' \text{ W.}$ ); residential dist.; calico printing and leather works; Quarrier's Orphan Homes; ruins of Ranfurly Castle. Pop. 2,600.

**Bridgeport**, city, Connecticut, U.S. ( $41^{\circ} 11' \text{ N.}$ ,  $73^{\circ} 14' \text{ W.}$ ), on Pequonnock Creek, Long Island Sound; handsome public and educational buildings; sewing-machine works; carriages, carriages, corsets, hardware, and ordnance. Pop. 102,000.

**Bridges**. Probably the earliest bridges were made by felling a tree, and directing its fall across a stream. Later, a baulk of timber was used, and placed on rough pillars formed of heaped-up stones. In Japan a kind of cantilever bridge was built long ago, in which pieces of timber

were embedded in each bank with their ends protruding over the stream and a cross-piece placed thereon. An anc. cantilever bridge—with beams 100 ft. long, and each embedded 50 ft. in the bank—was built at Sutlej, India. No doubt the first masonry bridges were constructed by the Romans, to whom the adoption of the arch is generally attributed.

**Stone Bridges**.—(a) *Arched*.—A bridge built by Trajan across the Danube (4,500 ft. long, 60 ft. wide) had twenty arches, each spanning 170 ft. and 150 ft. high; Adrian destroyed it through jealousy. The largest bridge in Europe in mediæval times was that of freestone over the Trent at Burton, built in 12th cent.; 1,545 ft. long, thirty-six arches; used until 1864. A three-arched bridge was built over riv. Taff at Pontypridd in 1746, but was swept away two and a half years later. A single span bridge of 140 ft. was erected in its place, but fell in. In 1750 a third attempt was made to bridge the river, this time successfully. Grosvenor Bridge, across the Dee at Chester, is a fine example of an arch bridge, being the second largest of its kind in existence; opened 1832; 200 ft. span, 42 ft. rise, 33 ft. wide; took five years to build; cost £50,000.

(b) *Semi-Elliptical Arched*.—The Waterloo and New London bridges are good examples of nine and five semi-elliptical arches respectively.

**Timber Bridges** are only found where timber is cheap and plentiful, as in America, where M'Callum's inflexible arched truss system is generally adopted.

*Cast-iron Bridges.*—In 18th cent. cast-iron arches were introduced, and first used in the bridge across the Severn, near Ironbridge; built 1779; a single arch of 100 ft. span. Southwark Bridge (built by Rennie, 1824) has three cast-iron arches supported on stone piers; centre arch has span of 240 ft. and 24 ft. rise; two side arches have 210 ft. span and 18 ft. 10 in. rise; cast-iron in centre arch weighs 1,605 tons, in each side arch, 1,400 tons. The High Level Bridge, Newcastle-on-Tyne, has bow-string arches, and has two roadways, one above for railway traffic, one below for vehicular and pedestrian; over  $\frac{1}{4}$  m. long; six spans of 125 ft. each; arches rest on stone piers 16 ft. thick; bridge contains 4,728 tons of cast-iron, 321 tons of wrought-iron; opened 1849; cost £243,000.

*Wrought-iron Bridges.*—Cast-iron being found unsuitable where long-span arches were required, wrought-iron tubes were employed. The first bridge of this kind was the Britannia Bridge over the Conway and Menai Straits, on Chester and Holyhead Ry. It consists of two independent and continuous wrought-iron tubular beams (1,510 ft long, weighing 4,680 tons) held by four towers, one built on Britannia Rock in midstream; bridge is 230 ft. above water; four spans, two over water being 460 ft. long, two over land, 230 ft.; weight of each long span is 1,587 tons, each short span, 630 tons.

*Lattice-girder Bridges* have sides of iron lattice work; the first erected was on the Dublin and Drogheda Ry. (1843); span, 84

ft. Charing Cross Bridge, across the Thames, on the S.E.R., is also of this type; contains 7,000 tons of metal; cost £180,000.

*Cantilever Bridges.*—The greatest and most magnificent bridge in the world—the Forth Bridge—is of this type; it belongs to a combine of railway companies; opened March 1890; crosses Forth at Queensferry; two large spans of 1,700 ft. (nearly  $\frac{1}{2}$  m.), two shore-end spans of 675 ft., and fifteen smaller spans of 168 ft., total length being  $1\frac{1}{2}$  m.; a mile is covered by cantilevers; 152 ft. above water; over 20 ac. of painted surface; cost £1,600,000. The second Quebec Bridge (finally completed 1918) has 500 ft. cantilever arms; 1,800 ft. span.

*Suspension Bridges* are those in which the roadway is suspended by chains, links, or steel ropes, passing over piers or towers, fixed firmly in the ground. Roebling's Bridge at Niagara (built 1855) has a span of 822 ft. The Menai Suspension Bridge, of iron, has two 12-ft. roadways and a foot-path; total length, 7,710 ft.; 579 ft. between points of suspension; weight of metal, 2,187 tons; took six years to construct; cost £120,000. A suspension bridge crossing the Sarine at Fribourg, Switzerland (1834), has a span of 870 ft., is 167 ft. above the river, and is suspended by steel ropes. The Clifton Suspension Bridge, Bristol, is hung by three chains on each side; span, 702 ft.; width, 31 ft. Brooklyn Suspension Bridge, crossing East R. and connecting Brooklyn with New York (built 1883), is of steel; central span, 1,595 $\frac{1}{2}$  ft. long; two land spans



of 930 ft. each; total length, 7,580 ft.; weighs 7,000 tons; has five roadways—two for vehicular traffic, one for pedestrians, and two for tramways. The neighbouring and more recent Manhattan Bridge (6,855 ft.) and Williamsburg Bridge (7,308 ft.) rank with Brooklyn Bridge.

*Movable Bridges* are generally used in connection with docks, canals, rivers, etc., where it is necessary to leave a clear way at times for shipping, etc., as—

(1) *Bascules*, or *Drawbridges*, which consist of one or two pieces so hinged that one end may be lifted up. Such bridges were used in mediæval castles. The Tower Bridge, London, comes under heading, although a compound of bascules and suspension. The suspensions are 270 ft. long, giving total length of 800 ft.

(2) *Swing Bridges* are the most common. Generally they swing on central pivot, as that over Raritan, New Jersey, which crosses two passages 216 ft. wide. Kansas City Bridge crosses two passages 160 ft. wide, moving weight of 303 tons; opened by steam in  $1\frac{1}{2}$  minutes.

(3) *Traversing Bridges*, or *Telescope Bridges*, are rolled horizontally backward and are uncommon. One is found at Arun, on S. Coast Ry.; 144 ft. long; moves on wheels.

(4) *Lift Bridges* are also uncommon, there being only two, one over Surrey Canal, one over canal at Dublin.

(5) *Pontoon* or *Floating Bridges* are constructed of boats fastened by anchors, and planks laid across to form roadway. One at Rouen, 900 ft. long, was

paved with stone. The longest crosses the Hugli at Calcutta; 1,530 ft. long; fourteen pairs of pontoons, each anchored by 3-ton weight; roadway of Burmese teak wood, 48 ft. wide, with foot-paths on each side; cost £182,000. Military bridges are generally on the pontoon principle, using boats, casks, or rafts.

(6) *Transporter Bridges* usually consist of two large towers which support, on the suspension or cantilever principle, horizontal girders which form a railway for a trolley from which a transporter car is suspended by steel cables; operated by electric power. The Runcorn bridge over the Mersey is the largest of its kind (span, 1,000 ft.); Rouen and Nantes also have bridges of this kind. J. C. Tidler, *Bridge Construction*; Dempsey, *Bridges, Tubular and other Iron Girders*.

**Bridges, ROBERT (1844– )**, poet laureate since 1913; formerly physician, and practised at various London hospitals; retired 1882; has published many volumes of plays in experimental metres, narrative poems and lyrics; *Poetical Works* (1898–1905); *The Spirit of Man*, an anthology in English and French (1916); and *October and other Poems* (1920). His poetry has long been appreciated by a limited but cultured class, but lacks appeal to a wide public.

**Bridges, SIR WILLIAM THROSBY (1861–1915)**, Australian soldier; served in S. African War; was first commandant of the Royal Military College, and in 1914 inspector-general of the Commonwealth Forces; directed organization of the 1st Australian

Division, which he commanded in Gallipoli; sniped May 15, 1915; body reinterred at Canberra; posthumous K.C.B.

**Bridget, St.** (1302-73), founded *Bridgettines* (Augustinian Order) in Sweden; order spread to other lands—famous English convent (*Bridgettines*) being that long established at Syon House, Isleworth, Middlesex. She lived in Rome from 1350.

**Bridget, St.**, or **St. BRIDE**, popular Irish saint of 5th cent.

**Bridgeton**, city, New Jersey, U.S. (39° 25' N., 75° 13' W.); port of entry; pig iron and ore, lumber, lime, coal, and grain; nails, glass, etc. Pop. 14,200.

**Bridgetown**, seapt. and cap., Barbados, Brit. W. Indies (13° 9' N., 59° 35' W.); open roadstead but small inner harbour; excellent place to study negro life and character. Pop. c. 20,000.

**Bridgettines**. See **BRIDGET, St.**

**Bridgewater**, tn., Massachusetts, U.S. (41° 59' N., 70° 58' W.); cotton; ironworks, brick-yards, etc. Pop. 7,700.

**Bridgewater**, **FRANCIS EGER-TON**, 3RD DUKE OF (1736-1803); pioneer in inland navigation in England; with aid of Brindley, made canals from Worsley to Manchester and from Manchester to Liverpool; these now belong to Manchester Ship Canal Co.

**Bridgewater**, **FRANCIS HENRY EGERTON**, 8TH EARL OF (1756-1829), in addition to bequeathing £12,000 to British Museum, left £8,000 for book on attributes of the Deity; this led to the *Bridge-water Treatises*.

**Bridgman**, **LAURA DEWEY** (1829-89), Amer. deaf-mute; was also blind, and deprived of smell

and almost of taste. Carefully taught in blind asylum of Boston, her mind developed in spite of her affliction. Her own impressions, and the observations made by her instructors, have proved of great service to the teachers of deaf-mutes and the blind. Lampson, *Life* (1878).

**Bridgnorth**, munic. bor., Shropshire, England (52° 31' N., 2° 26' W.), on Severn; manufactures carpets and worsteus. Remains of 11th cent. castle; birthplace of Thomas Percy, author of *Reliques of Ancient English Poetry*. Pop. 6,000.

**Bridgwater**, seapt., Somersetshire, England (51° 8' N., 3° 7' W.), 12 m. from Bristol Channel; manufactures bathbricks; has canal communication with Taunton. Pop. 15,200.

**Bridlington**, wat.-pl., E. Riding of Yorkshire, England (54° 6' N., 0° 12' W.); grammar school and priory church; fine bay, and good harbour. Pop. 10,000.

**Bridport**, seapt., Dorsetshire, England (50° 44' N., 2° 45' W.); records from 13th cent.; cordage, ropes, and sailcloth; flax mills; harbour (West Bay); fishing (mackerel). Pop. 5,900.

**Bridport**, **ALEXANDER HOOD**, 1ST VISCOUNT (1727-1814), Brit. admiral; distinguished in Seven Years' War and war with France after Revolution.

**Brief.** (1) A brief (in law) is an epitome or abridged statement of a client's case for the instruction of counsel, with a reference to the points of law supposed to be applicable to the case. (2) Papal briefs are sent by the papal court to individuals or religious communities, and relate to matters of privilege or disci-

pline. (3) Church briefs were letters sent out in the king's name, after the Reformation, to archbishops, bishops, the clergy, and magistrates, licensing them to collect money for church building and similar objects; since 1853 have been in abeyance.

**Brieg.** (1) Tn., Silesia, 1. bk. Oder (50° 51' N., 17° 28' E.); former duchy; old castle of dukes (1544); linen; embroideries; cottons and woollens. Pop. 29,000. (2) Also BRIG, or BRIGUE, tn., Valais, Switzerland (46° 19' N., 8° E.), on Rhone, at beginning of ascent to Simplon Pass, and at Swiss mouth of tunnel. Pop. 2,500.

**Brielle**, or BRIEL, port, Holland (51° 54' N., 4° 11' E.); at mouth of Meuse; known in history as Brill; captured by 'Beggars of the Sea' (Gueux), April 1, 1572, thus marking beginning of Dutch war against Spaniards; monument in commemoration. Pop. 4,200.

**Brienzen**, vil., Bern, Switzerland (46° 45' N., 8° 2' E.); centre of wood-carving industry; tourist resort. Pop. 2,600.

**Brierley**, BENJAMIN (1825-96), English dialect writer; ed. *Ben Brierley's Journal*, in which many of his novels and poems in the Lancashire dialect appeared. Whereas his contemporary Waugh wrote in the dialect of the moorlands, Brierley's vernacular was that of Lancashire towns. With Waugh and others he founded Manchester Literary Club (1864).

**Brierley Hill**, urban dist., par., and tn., Staffordshire, England (52° 30' N., 2° 10' W.); bottle-making, brickworks, potteries; chains and nails. Pop. 12,300.

**Brierly**, SIR OSWALD WALTERS (1817-94), English artist; spent much time in sea travel, and acquired that intimate knowledge of nautical life which gave realism to his marine pictures, the most famous of which are: *The Retreat of the Spanish Armada* (1871), *Drake and the 'Capitana'* (1872), and *The Loss of the 'Revenge'* (1877).

**Brieux**, EUGÈNE (1858- ), Fr. dramatist, whose plays deal mainly with social abuses and sexual problems; member of Fr. Academy. Bernard Shaw's *Three Plays by Brieux* (1916) contain *La Femme Seule*, *La Robe Rouge*, and *Les Remplaçantes*. *Les Avariés* ('Damaged Goods'), forbidden by Brit. censor, has been filmed and extensively exhibited.

**Brig**, two-masted sailing vessel, having square sails on both masts. *Brigantine* has square sails on foremast only; mainmast rigged fore and aft.

**Brigade**, number of military units grouped together for convenience of command; in Brit. army may mean small force of cavalry or infantry formerly commanded by *Brigadier-General* (rank superseded in 1920), or group of two or three batteries of artillery under command of a colonel. *Brigade-major* is chief staff officer of a brigadier-general.

**Brigandine** (O. Fr. *brigand*, 'a light-armed soldier'), light coat of mail composed of thin, jointed plates of metal.

**Brigands** (Ital. *brigante*, from *briga*, 'strife'), organized bands of robbers; common in all European countries in Middle Ages; the leader sometimes regarded as a hero (cf. Robin Hood).

Jacqueries in France produced large bodies of bandits; many in Spain during Peninsular War; banks of Rhine long infested with banditti; Ital. brigandage provided most romantic figures (Fra Diavolo); greatly reduced by Bersaglieri; in Sicily carried on by secret societies; Balkan states have unenviable reputation, especially Albania; recrudescence in Mexico during recent revolution.

**Brigantes**, anc. Brit. tribe who inhabited northern Eng. counties.

**Brig.-gen.**, Brigadier-general. See BRIGADE.

**Briggs, SIR CHARLES JAMES** (1865- ), Brit. soldier; served in S. African War, and in later stages commanded 1st Imperial Light Horse. In 1906 helped to crush the Natal native rebellion; in command of the 1st Cavalry Brigade did fine work at opening of Great War; promoted major-general, commanded 3rd Cavalry Division; given command of 28th Division at Salonica; operations on Struma front and in final offensive of 1918; promoted lieut.-general; in Feb. 1919 appointed head of Brit. military mission in S. Russia.

**Briggs, HENRY** (1561-1630), Eng. mathematician; prof. of geom., Gresham Coll. (1596-1619); Savilian prof. of astron., Oxford; authority on logarithms; originated 10 as best base for tables; pub. *Arithmetica Logarithmica* (1624), etc.

**Brigham**, city, Utah, U.S. (41° 30' N., 112° 3' W.), near N. shore of Great Salt Lake; agricultural centre. Pop. 3,700.

**Brighouse**, tn., W. Riding, Yorkshire, England (53° 43' N., 1° 46' W.), incorporated with

Hove Edge and Brighouse Rastrick (1893); woollens and worsteds; cotton; carpets; machinery and soap; flagstone quarries. Pop. 21,000.

**Bright, SIR CHARLES TILSTON** (1832-88), Eng. telegraph engineer; laid telegraph lines between London, Manchester, and Liverpool, also first cable between Scotland and Ireland; appointed engineer-in-chief to Atlantic Telegraph Co. (cable successfully laid Aug. 5, 1858); knighted; M.P. Greenwich (1865-8). See *Life* by his son, Sir Charles Bright (1898).

**Bright, JOHN** (1811-89), Brit. statesman and orator; b. Rochdale; son of a Quaker cotton manufacturer; educated at a Friends' school at Ackworth, and afterwards at York and Newton. While in his father's cotton mill he took great interest in public questions, and after a foreign tour (1835) became a prominent member of the Anti-Corn Law League, and joined Cobden in Free Trade agitation throughout the country. He entered Parliament (1843), already famous as an orator. In 1847 he was member for Manchester and advocated Free Trade, electoral reform, and religious freedom. He opposed the Crimean War (1854). In 1857 he was returned M.P. for Birmingham; his name is closely associated with Reform Bills of 1859-67; president of Board of Trade (1868); supported disestablishment of Irish Church (1869), and Irish Land Act (1870), and became chancellor of duchy of Lancaster (1873). Unable to support government's Egyptian policy, he retired (1882), and strenuously

opposed Gladstonian Home Rule Bill (1886). He was lord rector of Glasgow Univ. (1880), and received an honorary degree from Oxford Univ. (1886).

*Life and Speeches of Right Honourable John Bright, M.P.*, by George Barnett Smith (1881), and Vince (1898).

**Bright, RICHARD.** See under BRIGHT'S DISEASE.

**Bright, WILLIAM** (1824–1901), Eng. theologian; regius prof. of eccles. history at Oxford and canon of Christ Church; wrote on Early Eng. Church and was author of well-known hymns.

**Brightlingsea**, seapt., Essex, England (51° 49' N., 1° 2' E.); oyster fisheries; yacht and boat building. Pop. 4,400.

**Brighton.** (1) Tn., Sussex, England (50° 49' N., 0° 8' W.), on Eng. Channel; fishing vil. in 18th cent., now fashionable holiday resort; mild climate; magnificent promenade (3 m.); educational centre; 'Pavilion' was originally built as residence of George IV.; aquarium and piers; splendid hotels. Pop. 131,300. (2) Tn. and wat.-pl., Victoria, Australia (37° 55' S., 145° E.), on Port Philip Bay. Pop. 11,100.

**Bright's Disease**, inflammation of kidneys, named after the first describer, Richard Bright (1789–1858). It is characterized especially by changes in the urine, and by dropsy, first noticeable in the face, and a pasty colour of the skin. The onset is usually sudden, the first symptoms being chilliness, pains in the back, vomiting, and slight rise of temperature; an attack usually lasts four or five weeks, and may go on to the chronic form. The urine is

scanty, of high specific gravity, turbid, and contains blood corpuscles, hyaline, epithelial, and blood casts, and much albumen. The attack usually follows an acute specific fever (especially scarlet fever) or a chill. The treatment is to diminish the proteids in nourishment in order to rest the kidneys, give water and other diluents, increase the action of the skin and bowels, and give tonics during convalescence.

**Brignoles**, tn., Var, France (43° 25' N., 6° 4' E.); marble quarry; wine, olives, fruits (*prunes de Brignoles*); former summer residence of children of counts of Provence, hence *Villa Puerorum*. Pop. 4,500.

**Brigue.** See BRIEG.

**Bril, PAUL** (1554–1626), Flemish painter; painted frescoes at Vatican, Lateran, etc., assisted by brother, MATSYS (1550–84).

**Brill.** See BRIELLE.

**Brill**, fish belonging to same genus as turbot, from which it is distinguished by smooth skin, smaller size, and glistening spots.

**Brillat-Savarin, ANTHELME** (1755–1826), Fr. gastronomist; member of Court of Cassation (1797); his *Physiologie du Goût*, a lively and humorous work on the art of dining, has gone through numerous translations; pub. in English as *Handbook of Gastronomy* (1884).

**Brimstone.** See SULPHUR.

**Brin, BENEDETTO** (1833–98), Ital. naval designer and organizer; minister of marine for nearly twenty years; contributed powerfully to creation of shipbuilding and engineering yards and foundries in Italy, and gave to navy a series of ships, the

genesis of modern battle-cruiser. The Pre-Dreadnought battleship named in his honour blew up in Brindisi harbour (Sept. 1915).

**Brindaban**, tn., United Provinces, India ( $27^{\circ} 33' \text{ N.}$ ,  $77^{\circ} 42' \text{ E.}$ ), near r. bk. of Jumna; calico printing. Pop. 18,400.

**Brindisi** (anc. *Brundisium*), seapt. and archiepisc. see, Lecce, Italy ( $40^{\circ} 38' \text{ N.}$ ,  $17^{\circ} 56' \text{ E.}$ ); only really good harbour between Venice and extremity of S.E. Italy on Adriatic; many historical associations dating from Roman times; prosperity revived on opening of Suez Canal, but since 1898, when P. and O. made main base at Marseilles, has declined; cathedral 12th cent., museum 11th cent.; exports figs, wine, olive oil, coral, and silk; imports coal; torpedo station. Pop. 25,000.

**Brindley**, JAMES (1716-72), Eng. engineer, associated with Duke of Bridgewater in canal construction; Barton aqueduct over Mersey his greatest achievement; in all superintended construction of over 365 m. of canal (most important undertaking the Grand Trunk Canal between Trent and Mersey).

**Brine-shrimps**. See under ENTOMOSTRACA.

**Brink**, JAN TEN (1834-1901), prominent Dutch novelist and critic; ed. *Nederland* (1872). Collections of his literary sketches were pub. in 1882-8, and of his novels in 1885.

**Brinvilliers**, MARIE MADELEINE MARGUERITE D'AUBRAY, MARQUISE DE (c. 1630-76), infamous Fr. poisoner; beheaded in Paris and her body burned.

**Brionian Islands**, group of

twelve small islands in Adriatic Sea, N.W. of the harbour of Pola, Istria; quarries; Brione (largest) bathing resort; off islands Genoese defeated Venetians (1379).

**Brioude**, town, Haute-Loire, France ( $45^{\circ} 17' \text{ N.}$ ,  $3^{\circ} 24' \text{ E.}$ ); alt. 1,467 ft.; wine, wood, corn; lace; coal and baryta mined in neighbourhood; a quaint town associated with religious knights, 'counts of Brioude' (swept away at Revolution). Pop. 4,900.

**Briquette**, small press-moulded lumps of consolidated coal dust, fine ore, or other material; bound together with pitch, lime, etc. *Briquetting* is done by rotary or plunger presses. Ore briquetting is a method of utilizing for combustion flue dust of furnaces and smelters, slimes, roasted sulphide ores, etc.

**Brisbane**, cap. of Queensland, Australia ( $27^{\circ} 28' \text{ S.}$ ,  $153^{\circ} 2' \text{ E.}$ ), on riv. of same name, 25 m. from mouth in Moreton Bay; built on series of hills; low-lying parts have been scene of disastrous floods; river navigable up to city for ocean-going steamers; shipping trade concentrated in S. Brisbane (dry dock); most of houses are of wood built on piles; but the houses of Parliament, Treasury buildings, new Anglican cathedral (foundation stone laid by King George V. when Prince of Wales, 1901), R.C. cathedral, etc., are handsome; univ. of Queensland opened here in 1911; technical school; botanic gardens; preserved and frozen meats, fruit, hides and skins, wool, tallow, and pastoral produce; named after Sir T. M.

**BRISBANE.** Pop. with suburbs, 10 m. radius), 155,000.

**Brisbane, SIR T. MAKDOUGALL** (1773–1860), colonial governor and astronomer; governor of New South Wales and discoverer of Brisbane R.; founded three observatories—at Brisbane and Makerstoun, in Scotland, and at Parramatta, Australia; president of Brit. Association (1834).

**Brisset, EDMOND LEOPOLD** (1859– ), Fr. soldier; wide experience of colonial campaigning; promoted lieutenant-colonel (Aug. 10, 1914); served in Kamerun campaign; his column co-operated with British forces in Nigeria, and captured Kusseri (near Lake Chad); also helped to capture Garua and Ngaundere. See **KAMERUN, CONQUEST OF**.

**Brisson, EUGÈNE HENRI** (1835–1912), Fr. Radical statesman; prime minister (1885, 1898); president of the Chamber (1894–98, 1906); exposed Panama scandals, and insisted on revision of Dreyfus case.

**Bristle Worms.** See under **CHÆTOPODA**.

**Bristol, city, England** (51° 28' N., 2° 35' W.), in Gloucestershire and Somersetshire, at junction of Frome and Avon; important port, with good dock accommodation; large trade with U.S., Canada, Indies, and other parts of empire; exports coal, salt, tin-plates, machinery, cottons, chemical products, etc.; imports provisions, timber, grain, oils, marbles, ores, etc. Bristol is an episc. see, has cathedral, incorporating remains of Augustinian monastery, and many beautiful old churches, including that of St. Mary Redcliffe,

one of finest in England; fine public buildings, hospital, museum, etc.; seat of univ. (1909); has a lord mayor, and returns four members to Parliament. In district are traces of Roman and Brit. camps. The home of John and Sebastian Cabot, the city was one of the first to benefit by foreign trade, and was, until the rise of the northern manufacturing towns, the second city to London. Supported Parliament during Civil War; suffered three sieges; was scene of serious riots during Reform agitations (1831). Pop. 357,000.

**Bristol.** (1) Tn., Tennessee, and city in Virginia, U.S. (36° 34' N., 82° 13' W.); though independent in organization form one body of population; railway centre; coal and iron; flour, lumber, and tobacco. Pop. 13,400. (2) Bor., Pennsylvania, U.S. (40° 6' N., 74° 46' W.), on Delaware R.; cottons and woollens; makes carpets, wallpaper, hosiery and leather; has mineral springs. Pop. 9,300. (3) Port, Rhode I., U.S. (41° 38' N., 71° 18' W.); famous yacht-building centre (several America Cup defenders built here by Messrs. Herreshoff). Pop. 8,600. (4) Tn., Connecticut, U.S. (41° 41' N., 72° 56' W.); clocks; foundries, machine shops, and engine works. Pop. 9,700.

**Bristol Channel**, arm of Atlantic, separating S. Wales from s.w. counties of England (51° 20' N., 4° W.); high tides ('bores'); important fisheries.

**Brit., Britain, Britannia, Briton, British.**

**Britain** (Lat. *Britannia*), Roman name for island constituted

by England and Scotland; now whole terr. of Brit. Isles. Rhys suggests that 'Britain' is derived from the Celtic *brethyn*, 'cloth'—the inhabitants being 'cloth-clad.' It was not until their occupation by the Romans that the word Britannia came into use as a name for the British Islands, the divisions being *Britannia Romana* and *Britannia Barbara*. Severus (beginning of 3rd cent.) divided Britain into two provinces, *Britannia Superior* and *Britannia Inferior*.

**Britannia**, Lat. form of Britain and its personification in female figure on coins, etc. 'Rule Britannia,' written by James Thomson, is patriotic British anthem. Ship of this name formerly training school for cadets; superseded by the Royal Naval College on the riv. Dart.

**Britannia Metal**, white alloy of zinc, antimony, copper, and bismuth; used for cheap teapots, forks, spoons.

**Britannia Tubular Bridge**. See BRIDGES.

**Britannicus** (c. 41-55), son of Roman Emperor Claudius and Messalina; poisoned by Nero.

**British Association**, imperial society, founded at York (1831) by Sir D. Brewster for promoting scientific research; meets annually (Cardiff, Aug. 1920), occasionally in the colonies. Divided into twelve sections, subdivided into departments. Applies surplus revenue to grants for special researches.

**British Central Africa**. Until 1907 what is now officially known as Nyasaland Protectorate was called 'British Central Africa.' The latter term is now com-

monly used to denote all Brit. territory in Central Africa (as distinguished from Brit. East, Brit. West, and Brit. South Africa)—viz., Nyasaland and that part of Rhodesia N. of the Zambezi.

**NYASALAND** (9° 30'–17° S., 33°–36° E.), Brit. protectorate; bounded on N. by E. Africa; E. and S. by Port. E. Africa; W. by N. Rhodesia; area, 39,315 sq. m. Surface is mostly lofty plateau over 3,000 ft. above sea-level; numerous streams flow into Lake Nyasa, which drains by Shiré R. into Zambezi. From Blantyre (chief town), in Shiré 'Highlands,' railway (113 m.) runs to Port Herald on Port. border, whence there is steamer service to Chinde on coast by Shiré and Zambezi. Stevenson's Road connects Lakes Nyasa and Tanganyika. First explored by Portuguese, Nyasaland was later and more thoroughly mapped by Livingstone; British Central Africa Protectorate established (1892); proclaimed Nyasaland Protectorate (1907).

Nyasaland is administered by governor, assisted by executive and legislative councils and district residents; seat of administration is Zomba. Pop. (largely concentrated in healthy Shiré Highlands) consists of 1,137,300 natives, 700 whites, and 400 Asiatics; missionary centre: sleeping-sickness in parts. Chief exports are tobacco, cotton, tea, rubber, beeswax, coffee; imports include textiles, machinery, tools, food-stuffs, and hardware.

*Nyasaland Handbook*; Johnston, *Brit. Central Africa* (1897); Werner, *The Natives of Brit. Central Africa* (1906).





son, Peace. Climate varies; mild near coast, dry and hot in s. interior, severe winters in n.; heavily wooded; important commercial trees are Douglas fir, maple, yellow cypress, red and yellow cedar, white spruce; much pastoral and agricultural land. Chief industries are lumbering, mining, fruit growing, ranching, fishing, canning, fur sealing; very rich in minerals; gold is worked in the Yukon valley and at Cariboo and Kootenay; coal, silver, lead, copper, are also mined; the working of cinnabar, platinum, gypsum, asbestos, plum-bago, has begun. Cap., Victoria, is situated on Vancouver I.; other towns, Vancouver and New Westminster, on mainland; univ. of prov., Vancouver (1913); railways being greatly extended. Administration is carried out by lieutenant-governor, assisted by executive council and legislative assembly; represented in Federal Parliament by three senators and seven members of lower house. Brit. Columbia became a Brit. colony (1858); united with Vancouver (1866); admitted into Dominion of Canada (1871); Alaska boundary dispute with U.S. settled (1903). Area, 383,000 sq. m.; pop. 392,500.

**British East Africa**, Brit. terr. in E. Central Africa, comprising (1) E. Africa Protectorate, now Kenya Colony (June 1920), (2) Uganda Protectorate, (3) Zanzibar Protectorate, now Kenya Protectorate (June 1920). See EAST AFRICA.

**EAST AFRICA PROTECTORATE** (1° N., 39° E.), bounded by Abyssinia (N.), Uganda Protectorate (W.), former Ger. E. Africa (S.), Ind.

Ocean and Ital. Somaliland (E.); seaboard about 400 m.; coastal strip from former Ger. frontier to Kipini, Lamu Archipelago, and Kismayu, near Juba, are leased from Sultan of Zanzibar. Coast regions are flat and unhealthy; parts of interior healthier; traversed by volcanic mountain ranges; highest peak, Mt. Kenia (17,000 ft.). Chief rivers are Juba, Tana, Sabaki; principal lakes, Sugota, Naivasha, Baringo, and part of Rudolf and Victoria Nyanza.

In interior are valuable forests and fine pasture lands; southern and north-eastern districts fertile. Principal products are maize, rice, coco-nuts, hemp, coffee, wheat, valuable timber, ostriches, sheep; exports ivory, rubber, hides, skins, cotton, copra, tobacco. Mineral resources as yet unimportant. Country gives promise of great developments. Mombasa-Victoria (Uganda) State Ry. (618 m.) was completed in 1902; steamers on Lake Victoria Nyanza; cable between Zanzibar and Mombasa. Coast is inhabited by Swahilis and Arabs; Somalis, Gallas, Bantu, etc., inland. Paganism predominates, but Mohammedanism is spreading rapidly, especially on coast. Principal towns are Nairobi (cap.), Mombasa (chief port), Lamu, Kismayu, Malindi (ports), Kisumu, Nyeri. Portuguese arrived in 15th cent. and built forts at Mombasa, Lamu, and Malindi; terr. conquered by the Imâm of Muscat (1698); Germans acquired a protectorate over Witu (1884); Brit. E. Africa Co. assumed control over Sultan of Zanzibar's mainland posses-

sions (1888); boundary agreements made between Germany and Britain (1886, 1890), Britain and Italy (1891), Britain and Congo Free State (1894); protectorate of Great Britain accepted by sultan (1890); administration taken over by Foreign Office (1895), by Colonial Office (1905); explored by Krapf, Burton, Speke, Grant, Baker, Stanley, etc. East Africa Protectorate is divided into seven provinces: Ukamba, Seyidie, Tanaland, Jubaland, Kenia, Naivasha, Nyanza, and some unorganized terr. in n.; administered by governor and executive and legislative councils. Area, 246,822 sq. m.; pop. c. 2,800,000 (including 5,400 Europeans and Eurasians and 17,000 Asiatics).

UGANDA (1° N., 33° E.), bounded n. by Egyptian Sudan, e. by E. Africa Protectorate, w. by Congo State, s. by former German E. Africa and Lake Victoria Nyanza. It is divided into five provinces: Buganda with islands in Lake Victoria, the Eastern, Northern, Western, and Rudolf Provinces, each divided into several districts; Uganda is traversed by high volcanic mountain ranges; Ruwenzori Range in w., with glaciers and snowfields, highest peak, Mt. Stanley (16,816 ft.); Mt. Elgon (14,152 ft.) on border of Eastern Province, Mt. Debasin in Eastern Province, Mt. Agoro in Northern Province, etc. Principal river is Nile. Uganda contains part of Lakes Rudolf, Albert, Edward, Victoria, and the whole of Lakes George, Kioga, Salisbury. Soil is fertile except in Rudolf Province, which is hot and very dry;

luxuriant tropical vegetation, extensive forests; marshy tracts in Eastern Province. Climate is healthy in parts; sleeping-sickness prevalent in the Victoria Lake region, owing to tsetse fly. Fauna includes giraffe, elephant, okapi, chimpanzee, buffalo, zebra, rhinoceros, hippopotamus, and antelope. Chief products are cotton, rubber, ivory, timber, gum, hides, sugar, ground-nuts, chillies, coffee, cocoa, vanilla, cattle, sheep. Iron ore, copper, and gold are found. Chief towns are Entebbe (Brit. headquarters), Mengo (the native cap. of Uganda), Jinja. Native tribes include Baganda (civilized and intelligent), Banyora, Bari, Madi, Tesi, and pygmies known as Bambute or Bakwa. Missionaries established stations (1877-99), which progressed favourably under the reign of King Mtesa. His son, Mwanga, who succeeded him in 1884, persecuted Christians, and caused the murder of Bishop Hannington (1885). The authority of Brit. E. Africa Co. was recognized (1890) by agreement between Captain Lugard and Mwanga; Uganda became a Brit. Protectorate (1894); explored by Speke and Grant (1862), Baker (1864), Stanley (1875), and others. 'Uganda Railway,' through E. Africa Protectorate, does not enter Uganda, but reaching Victoria Nyanza gives Uganda an outlet to the coast. Railways run between Jinja and Namasagali on Nile, and between Port Bell and Kampala. Steamers ply on Lakes Victoria and Albert Nyanza. Uganda is administered by a governor. There are several Prot. and R.C. schools,

and many missionary societies. Area, 109,119 sq. m.; native pop. c. 3,358,000, and 570 Europeans.

**ZANZIBAR PROTECTORATE.** See **ZANZIBAR.**

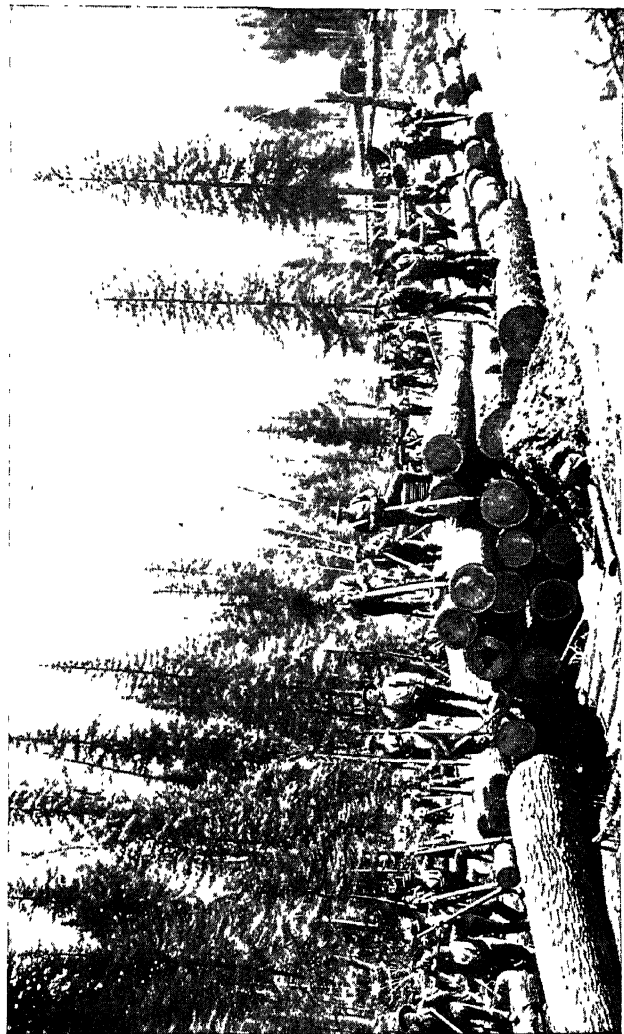
Hindlip (Lord), *Brit. E. Africa* (1905); Ward and Milligan, *Handbook on Brit. E. Africa* (1912).

**British Empire**, the unofficial but popular and convenient term for the aggregation of territory under the Brit. crown. The title of the Brit. sovereign is, 'George v., by the grace of God of the United Kingdom of Great Britain and Ireland, and of the Brit. Dominions beyond the Seas, King, Defender of the Faith, Emperor of India.' The various colonies, possessions, protectorates, etc., which comprise the empire are indicated in the accompanying table. The following ex-German colonies are held by mandate from the LEAGUE OF NATIONS: Togo and Kamerun (shared with France); Ger. E. Africa (shared with Belgium); island of Nauru (S. Pacific); Ger. S.W. Africa (held by Union of S. Africa); Ger. Samoan Islands (held by New Zealand); all Ger. possessions s. of equator except those mentioned above (held by Commonwealth of Australia). Many of the Brit. states have responsible government, and a parliamentary system approximating closely to that of the mother country. All legislative Acts of these local parliaments require the royal assent (given through a governor or gov.-gen. nominated by and acting for the crown). Every colonial subject enjoys Brit. citizenship, and the right of ultimate appeal to the judicial committee of the Privy Coun-

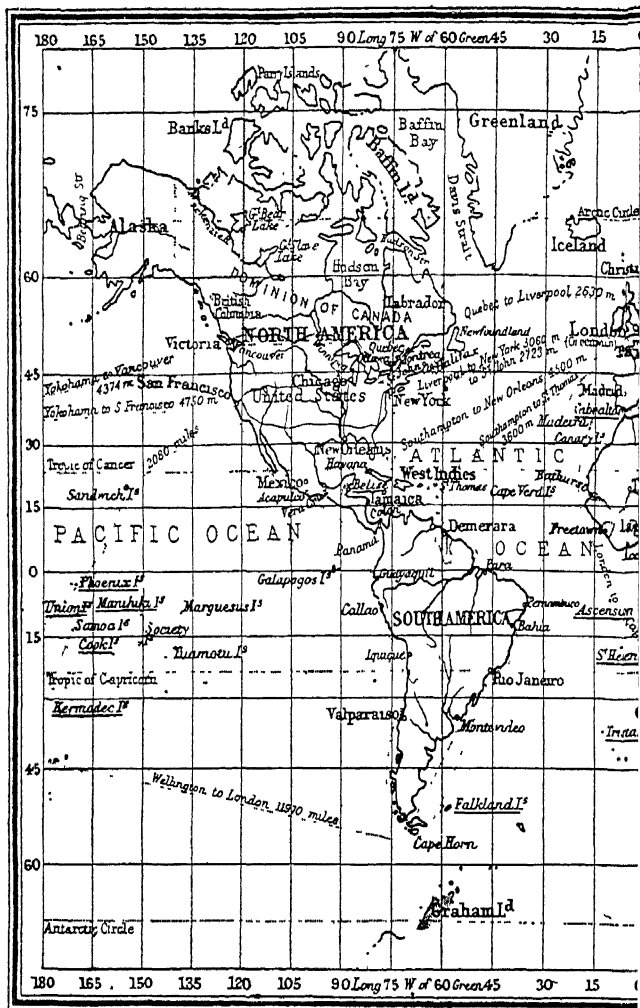
cil. Each self-governing colony is an *imperium in imperio*, and may be regarded as a nation intensely conscious of its nationality, especially since the participation of the Dominions in the Great War. (For the movement towards closer union, see **IMPERIAL FEDERATION.**) Next in dignity to the self-governing colonies are the crown colonies, with legislative bodies partly elective and partly nominated; these are under the Colonial Office, and are ruled by governors and local officials appointed by the home government. Dependencies, in the specific use of the term, are subordinate to the government of some other possession, or are provinces or parts of colonies administered by functionaries appointed by the governments on which they are dependent. Protectorates are areas more or less subject to Brit. control by treaty or otherwise, but internally independent. The empire also includes 'spheres of influence' nominally belonging to Britain, but either unoccupied or not yet brought under authority. In addition, there are the new territories handed over to Britain as mandatory of the League of Nations, held on specified conditions. The extraordinary growth of the empire between 1837 and the present time may be judged from the fact that in the former year the extent of Brit. territory was under 5,000,000 sq. m., and its population less than 200,000,000, about 30,000,000 being whites. Its area now exceeds 11,000,000 sq. m., more than one-fifth of the land surface of the world, and its pop.

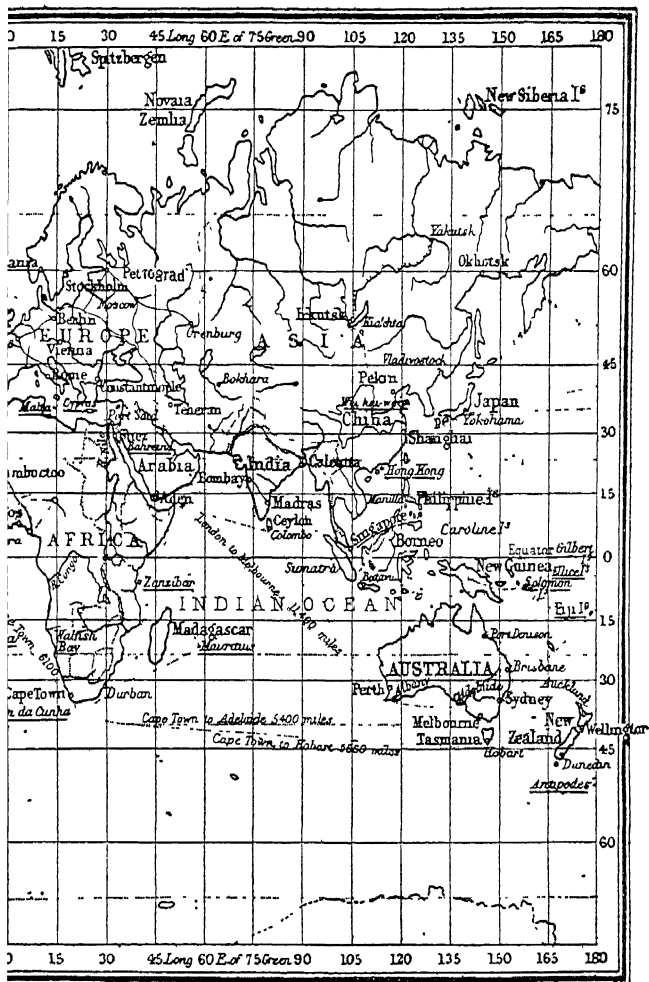
# STATISTICS OF THE BRITISH EMPIRE.

|  | Area in<br>Sq. Miles. | Pop in<br>1,000's (est.) | Governments   |
|--|-----------------------|--------------------------|---|
| <b>UNITED KINGDOM</b>  |                       |                          |   |
| England and Wales . . .  | 58,240                | 36,075                   | } Constitutional Monarchy.<br>Governor, Council, and House of Keys<br>Lieut.-Governor; Court; States.                           |
| Scotland . . . . .   | 30,405                | 4,750                    |   |
| Ireland . . . . .  | 32,590                | 4,390                    |   |
| Isle of Man . . . . .  | 227                   | 52                       |   |
| Jersey . . . . .   | 45                    | 97                       |   |
| Guernsey, etc . . . .  | 30                    |                          |   |
|  | 121,607               | 45,273                   |   |
| <b>EUROPE:</b>   |                       |                          |   |
| Gibraltar . . . . .  | 2                     | 20                       | } Military Governor.<br>Governor; Councils.   |
| Malta . . . . .  | 95                    | 212                      |   |
| Gozo . . . . .   | 20                    |                          |   |
| Comino . . . . .   | 2                     |                          |   |
| Cyprus . . . . .   | 3,584                 | 274                      | } High Commissioner; Councils.  |
|  | 3,703                 | 506                      |   |
| <b>ASIA:</b>   |                       |                          |   |
| Aden Dependencies<br>and Protected Ter-<br>ritory, Perim,<br>Socotra, Kuria<br>Muria Islands . . . | 10,500                | 60                       | } Political Resident (under the Govern-<br>ment of Bombay).<br>Political Agent under Indian Govern-<br>ment.                    |
| Bahrain Island . . .   | .                     | 103                      |   |
| India and Burma . . .  | 1,093,102             | 244,000                  | } Viceroy; Council; Departments.<br>Native Rulers under Political Super-<br>vision  |
| Indian Feudatory<br>States, Baluchi-<br>stan, etc . . . . .  | 709,555               | 70,829                   |   |
| Ceylon . . . . .   | 25,481                | 4,632                    | } Governor; Executive and Legislative<br>Councils.  |
| Federated Malay<br>States . . . . .  | 27,506                | 1,037                    |   |
| Straits Settlements .  | 1,600                 | 821                      | } Under Straits Settlements with Resi-<br>dent General.<br>Governor; Executive and Legislative<br>Councils                      |
| Laccadives . . . . .   | 740                   | 81                       |   |
| Maldives . . . . .   |                       |                          | } Under Madras Government.<br>Under Ceylon Government<br>Chief Commissioner under Indian Gov-<br>ernment.                       |
| Andaman . . . . .  | 3,140                 | 26                       |   |
| Nicobar . . . . .  |                       |                          |   |
| Borneo, British<br>North . . . . .   | 31,106                | 210                      | } Governor (British North Borneo Com-<br>pany).<br>Native Sultan under British Resident.<br>Protected State under Rajah Brooke. |
| Brunei . . . . .   | 4,000                 | 24                       |   |
| Sarawak . . . . .  | 50,000                | 600                      | } Governor; Executive and Legislative<br>Councils.<br>Governor.   |
| Hong-kong and<br>Kowloon . . . . .   | 390                   | 457                      |   |
| Wei-hai-Wei . . . .  | 285                   | 147                      |   |
|  | 1,957,405             | 323,027                  |   |
| <b>AFRICA:</b>   |                       |                          |   |
| Cape of Good Hope .  | 276,965               | 2,565                    | } The Union of South Africa—Governor-<br>General; Executive Council; Senate;<br>House of Assembly.                              |
| Natal . . . . .  | 35,221                | 1,904                    |   |
| Transvaal . . . . .  | 110,450               | 1,686                    |   |
| Orange Free State .  | 59,389                | 523                      |   |
| Basutoland . . . . .   | 11,716                | 405                      |   |
| Bechuanaland Pro-<br>tectorate . . . . .   | 275,000               | 125                      | } Resident Commissioner.  |
|  |                       |                          |   |



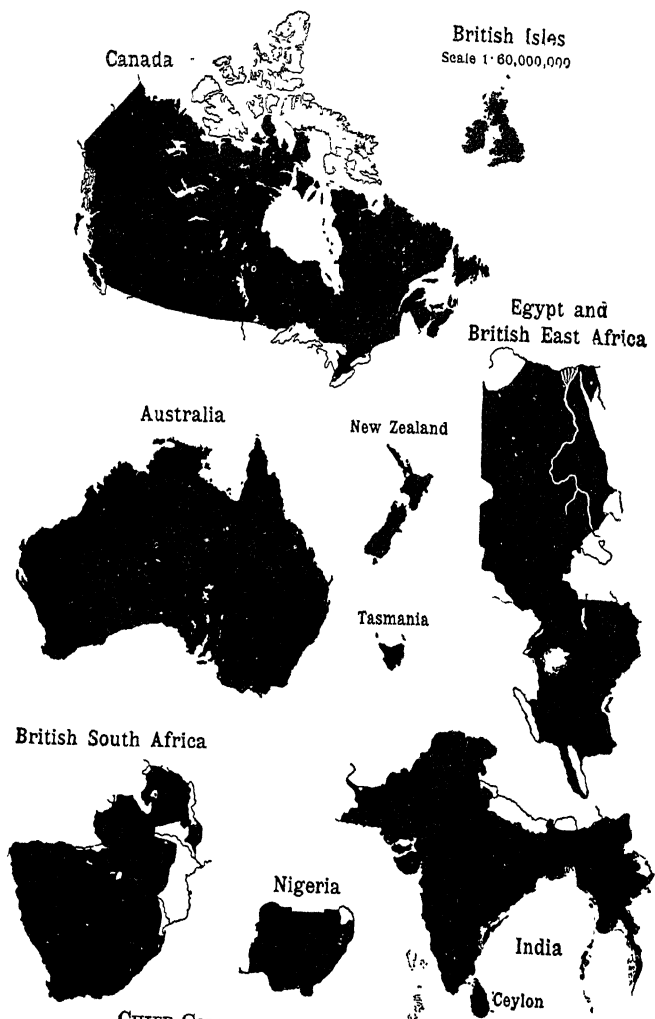
LUMBERING IN BRITISH COLUMBIA.





## THE BRITISH EMPIRE.





CHIEF COUNTRIES OF THE BRITISH EMPIRE.  
Drawn on a Uniform Scale of Area

# STATISTICS OF THE BRITISH EMPIRE.

|   | Area in<br>Sq. Miles. | Pop. in<br>1,000's (est.) | Governments.  |
|---|-----------------------|---------------------------|---|
| <b>AFRICA (continued):</b>  |                       |                           |   |
| Swaziland . . . . .   | 6,678                 | 100                       | Resident Commissioner.<br>Executive Council and British South<br>Africa Company.  |
| Rhodesia, N. and S . .  | 440,000               | 1,680                     |   |
| Nyasaland Protec-<br>torate . . . . .                                   | 39,570                | 1,229                     | } Governor; Executive and Legislative<br>Councils.  |
| East Africa Protec-<br>torate . . . . .                                 | 248,000               | 2,651                     |   |
| Uganda Protectorate . .   | 109,119               | 3,357                     | } Governor and Native Council.<br>Sultan and Consul-General.  |
| Zanzibar Protectorate .   | 1,020                 | 197                       |   |
| Somaliland Protec-<br>torate . . . . .                                  | 68,000                | 300                       | } Commissioner.   |
| Mauritius . . . . .   | 720                   | 385                       |   |
| Seychelles . . . . .  | 156                   | 23                        | } Governor; Executive and Legislative<br>Councils.  |
| Gambia . . . . .  | 4,000                 | 152                       |   |
| Sierra Leone . . . . .  | 30,000                | 1,406                     | } Governor, Executive Council.<br>Governor; Executive Council.<br>Under the Admiralty.  |
| Gold Coast Colony . . .   | 80,000                | 1,500                     |   |
| Nigeria Protectorate . .  | 335,700               | 16,261                    |   |
| St Helena . . . . .   | 47                    | 4                         |   |
| Ascension . . . . .   | 34                    | 0·2                       |   |
|   | 2,122,859             | 36,557·2                  |   |
| <b>AMERICA:</b>   |                       |                           |   |
| Canada . . . . .  | 3,729,700             | 7,207                     | Governor-General; Parliament.   |
| Newfoundland and<br>Labrador . . . . .                                  | 162,000               | 257                       | } Governor; Parliament.   |
| Bermudas . . . . .  | 19                    | 20                        |   |
| British Honduras . . . .  | 8,600                 | 43                        | } Governor; Executive and Legislative<br>Councils.  |
| Bahamas . . . . .   | 4,404                 | 60                        |   |
| Barbados . . . . .  | 166                   | 187                       | } Governor and Legislative Assembly.  |
| Jamaica . . . . .   | 4,450                 | 8·1                       |   |
| Trinidad and Tobago . .   | 1,871                 | 383                       | } Governor; Executive and Legislative<br>Councils.  |
| Leeward Islands . . . .   | 704                   | 132                       |   |
| Windward Islands . . . .  | 524                   | 178                       | } Governor-in-Chief and Councils.   |
| British Guiana . . . . .  | 89,500                | 314                       |   |
| Falkland Islands and<br>South Georgia . . . . .                         | 7,500                 | 3·25                      | } Governor; Executive and Legislative<br>Councils.  |
|   | 4,009,438             | 9,615·25                  |   |
| <b>AUSTRALASIA:</b>   |                       |                           |   |
| New South Wales . . . .   | 310,367               | 1,891                     | } Separate State Legislature and Govern-<br>ments (Governors), Federal Parliament<br>and Government; Governor-General<br>and Executive Council. |
| Victoria . . . . .  | 87,884                | 1,411                     |   |
| Queensland . . . . .  | 670,500               | 706                       | } Under Commonwealth Government.<br>Governor and Houses of Parliament.<br>Governor and Legislative Council.                                     |
| South Australia . . . . .   | 380,070               | 436                       |   |
| Northern Territory . . .  | 523,600               | 5                         | } High Commissioner for the Western<br>Pacific.   |
| Western Australia . . . .   | 975,920               | 312                       |   |
| Tasmania . . . . .  | 28,215                | 203                       |   |
| Papua . . . . .   | 90,500                | 273                       |   |
| New Zealand . . . . .   | 103,866               | 1,169                     |   |
| Fiji . . . . .  | 7,083                 | 166                       |   |
| Pacific Islands:—<br>Tonga, Solomon, and<br>Gilbert Isls., etc. . . . . | 11,450                | 205                       |   |
|   | 3,187,455             | 6,777                     |   |
| Total . . . . .   | 11,402,467            | 421,855·45                |   |

417,000,000—about one-fourth of the world's inhabitants. The absolute dependence of the empire and its trade on Brit. sea-power is too obvious to need more than passing remark. Canada and Australia have now set

face rises from flat, swampy coast (below sea-level) to Guiana high-lands; four-fifths forested; chief rivers, Essequibo, Berbice, Demerara, Corentyne; climate not unhealthy; products: sugar, rice, cocoa, coffee, coco-nuts,

### Important Dates in Development of British Empire.

|   |      |
|---|------|
| Cabot lands in Canada . . . . .   | 1497 |
| French colonize Canada . . . . .  | 1535 |
| English E. India Trading Co. formed . . . . .   | 1599 |
| Newfoundland colonized by British . . . . .   | 1634 |
| Jamaica captured . . . . .  | 1655 |
| Brit. power supreme in Canada . . . . .   | 1763 |
| Australia annexed by Captain Cook . . . . .   | 1770 |
| Independence of Amer. colonies recognized . . . . .   | 1783 |
| Cape Colony (S. Africa) founded . . . . .   | 1795 |
| Brit. colonization of New Zealand . . . . .   | 1814 |
| Brit. Government take over control of India from E. India Co. . . . .                             | 1858 |
| Dominion of Canada formed . . . . .   | 1867 |
| First (Canadian) proposal for imperial preference in trade . . . . .                              | 1879 |
| Colonial Defence Committee formed . . . . .   | 1885 |
| First Colonial Conference . . . . .   | 1887 |
| Brit. S. Africa Co. formed to colonize Rhodesia . . . . .   | 1889 |
| Brit. power supreme in S. Africa . . . . .  | 1900 |
| Australian Commonwealth proclaimed . . . . .  | 1901 |
| Union of S. African Colonies . . . . .  | 1909 |
| Imperial Defence Conference . . . . .   | 1909 |
| Overseas Dominions first consulted regarding imperial foreign policy . . . . .                    | 1911 |
| Self-governing Dominions acknowledged at the Peace Conference to be independent nations . . . . . | 1919 |

themselves the task of building up navies of their own. The subjoined table gives the outstanding landmarks of Brit. empire development.

**British Guiana**, Brit. colony, S. America (5° N., 58° W.); sur-

balata and rubber, timber, gold; indentured E. Indian immigration; about 100 m. of railway; cap. Georgetown. Terr. in Dutch hands till 1796; ceded to Britain (1814); ruled by governor, court of policy, and combined court.

Boundary disputes with Venezuela (1899) and Brazil (1906); colony shares in W. Indies Sugar Reciprocity Agreement of 1912. Area, 89,480 sq. m.; pop. 314,000.

Rodway, *Guiana: British, Dutch, and French* (1912).

**British Honduras**, crown colony, E. coast of Central America (18° N., 88° 20' W.), on Caribbean Sea, between Mexican state of Yucatan and Guatemala. The N. is low and full of swamps; S. is mountainous. Staple products are mahogany, logwood, bananas, coffee, cacao, chicle, plantains, etc. Higher ground affords excellent pasturage for cattle. Climate generally damp and hot, but not unhealthy. Colony is administered by a governor, assisted by executive and legislative councils. Cap. and chief port is Belize. Area, 8,600 sq. m.; pop. 43,000, composed mostly of Indians, 1 per cent. only being Europeans.

**British Isles**, **THE**, name for the area occupied by the United Kingdom; extensive archipelago on the continental shelf W. of the Continent of Europe (excluding Channel Islands, 49° 50'–61° N., 2° E.–10° 30' W.); separated from Continent by North Sea, Straits of Dover, and the English Channel; consists of two large islands and some 5,000 small islands and islets, occurring either singly or in groups. The largest island is Great Britain (**ENGLAND AND WALES**; **SCOTLAND**); the other large island is **IRELAND**. Among single islands are **ISLE OF MAN**, **ANGLESEA**, and **ISLE OF WIGHT**; amongst the groups are **ORKNEY** and **SHETLAND ISLANDS** and **HEBRIDES** (to N., and W. and

N.W. of Scotland respectively); **SCILLY ISLANDS** (S.W. of England); there are numerous groups of small islands round the Irish coast, in the Scot. firths, etc. The **CHANNEL ISLANDS** belong politically to the U.K., but are physically part of France. Total area, 121,390 sq. m.; pop. 45,365,000.

**British Museum**, **THE**, national depository of books, MSS., and various antiquities and objects of art, Great Russell Street, London. In 1754 Montague House was purchased by the government for lodgment of Cottonian and Harleian MSS., and the Sloane Library and Museum; it was opened (1759) as the British Museum, but pulled down (1845), and the present building erected on its site. The great circular domed reading-room, with wide reading space for 300 readers, was added in 1857. The library contains about 2,000,000 books, and is entitled to a copy of every publication which appears in Great Britain. The Natural History exhibits were removed to S. Kensington Natural History Museum (1880–1). Hints and directions as to use of British Museum will be found in *The British Museum Reading-Room* (R. A. Peddie).

**British North America Act**. See **CANADA**.

**British North Borneo**. See under **BORNEO**.

**British Pacific Cable**, all-British, running from Vancouver to Fanning I. (Pacific), thence to Fiji and Norfolk I., and onward (by two cables) to New Zealand and Australia (Queensland) respectively. A length of the

Canadian land-line leased from the Canadian Pacific Ry. connects Vancouver with Montreal; in 1913 a cable was laid between Sydney and Auckland (N.Z.); cable is property of U.K., Canada (each with five-eighteenths of the ownership), New South Wales, Victoria, Queensland, and New Zealand (two-eighteenths each). Opened for traffic Dec. 8, 1902; cost £1,795,000.

**British South Africa Company**, chartered company with large administrative powers in Rhodesia, and authorized to carry on trade, work the minerals, etc., in that country; charter granted Oct. 29, 1839, mainly through the efforts of Cecil Rhodes; first administrator, Dr. Jameson (afterwards Sir L. S. Jameson), 1895-6; authorized capital is £9,000,000. See RHODESIA; also under CHARTERED COMPANIES, and annual reports of the company.

**British Thermal Unit.** See under B.T.H.U.

**British Western Pacific**, name for all islands in the Western Pacific not within the limits of Fiji, Queensland, New South Wales, or any other civilized power; within the jurisdiction of the High Commissioner for the W. Pacific, who is also governor of Fiji. See ELLICE ISLANDS; FANNING; GILBERT ISLANDS; PHOENIX GROUP; SOLOMON ISLANDS; TONGA ISLANDS; and UNION OF TOKELAU ISLANDS.

**British West Indies.** See under WEST INDIES.

**Britomartis**, virgin deity of Crete, pursued by Minos, the Cretan king, plunged into the ocean and was created a goddess by Artemis (Dictynna, 'of the

net'); probably a Cretan form of Artemis, mentioned by Pausanias (books ii. and iii.).

**Briton Ferry**, tn., Glamorgan-shire, Wales (51° 37' N., 3° 49' W.); extensive steel and iron works; docks belong to G.W.R. Pop. 8,500.

**Britonite**, an ammonium nitrate explosive, containing also potassium nitrate and chlorate with naphthalene.

**Brits**, COHEN, South African general, prominent on the loyalist side during the rebellion (Sept.-Dec. 1914); later as brigadier-general fought in German S.W. Africa; commanded as major-general 3rd Division in the E. African campaign.

**Brittany**, or BRETAGNE (anc. *Armorica*), former prov., France, now the depts. Ille-et-Vilaine, Côtes-du-Nord, Finistère, Morbihan, and Loire-Inférieure (46° 53'-48° 53' N., 0° 56'-40° 46' W.); peninsula bounded N. by Eng. Channel, W. by Atlantic, S. by Bay of Biscay; coast deeply indented; surface mountainous; megalithic monuments (Dol); quaint towns; original pop. said to be of Alpine stock greatly modified by the Brythonic Celts, who migrated from Britain during Saxon invasion of 5th and 6th centuries, hence the name Little Britain; one of last strongholds of Druidism; people suspicious and reserved; language resembles Welsh; anc. *Armorica* was a Roman prov.; independent duchy in Middle Ages; added to Fr. crown by marriage of its duchess Anne with Louis XII.; fishing and farming are the main industries.

**Brittle Stars.** See under ECHINODERMATA.

**Britton**, JOHN (1771-1857), Eng. antiquary; wrote numerous popular topographical works, including *The Beauties of England and Wales*, *The Architectural Antiquities of Great Britain* (1807-14), *Autobiography* (1850), and *Papers* (1856-7).

**Britz**, vil., Potsdam, Prussia (52° 24' N., 13° 38' E.), 4 m. S. of Berlin; a busy horticultural centre. Pop. 11,500.

**Brive** (BRIVES-LA-GAILLARDE), tn., Corrèze, France (45° 9' N., 1° 31' E.), on l. bk. of Corrèze, in fertile, picturesque district, producing early vegetables, truffles, wine, *pâté de foie gras*, etc.; old fortifications now boulevards; 12th cent. Romanesque church; rock caves with prehistoric dwellings. Pop. 21,500.

**Brixen**, tn., episc. see, summer resort, Tyrol, Austria (46° 44' N., 11° 39' E.); for nine centuries cap. of a spiritual principality (suppressed 1803); 15th cent. cathedral with two copper-roofed towers. Pop. 65,000.

**Brixham**, seapt. and mrkt. tn., on Tor Bay, Devonshire, England (50° 23' N., 3° 31' W.); important trawling centre; some coasting trade; landing-place of William of Orange (Nov. 1688); cavern with prehistoric remains discovered 1858. Pop. 8,000.

**Brixton**, dist. of S. London; in metropolitan bor. of Lambeth. Pop. 76,000.

**Brizures**, in heraldry, variations on original arms of family to distinguish cadets from the head and from each other.

**Broach**. (1) Dist., Gujarat, Bombay, India; broad alluvial plain of Lower Narbada; cotton, jowar, wheat, and rice; fre-

quently visited by famine. Area, 1,467 sq. m.; pop. 306,700. (2) Chief tn. of above (21° 43' N., 73° 2' E.); formerly important seapt., and famous for cloth; cotton factories. Pop. 43,400.

**Broad Arrow**, cognizance of Viscount Sydney, Earl of Romney, master-general of the ordnance (1693-1702); first used in his time as royal mark on government stores.

**Broad Arrow**, tn., W. Australia (30° 20' S., 121° 19' E.); centre of goldfields in the desert area, connected by rail with Perth. Pop. of dist., 3,000.

**Broadmoor**, state asylum for criminal lunatics, Berkshire, England (51° 22' N., 0° 46' W.); accommodates 700 patients.

**Broads**, THE, series of picturesque shallow fresh-water lakes in Norfolk (mainly) and in Suffolk; formerly great estuary, now largely silted up; some in course of rivers, others connected with rivers by artificial channels; about a dozen large broads, largest being Hickling (400 ac.); 200 m. of navigable water in dist.; famous for yachting, fishing, and fowling.

**Broadstairs**, eccles. par. and wat.-pl., Isle of Thanet, Kent, England (51° 21' N., 1° 26' E.); brought into notice by Charles Dickens, who gave the name of his residence (*Bleak House*) to one of his novels. Pop. 9,000.

**Broadwood**, ROBERT GEORGE (1862-1917), Brit. soldier, served in Egypt (1896 and 1898); commanded 2nd Cavalry Brigade in S. African War, and was ambushed at Sanna's Post by De Wet; captured Cronje and other Boer generals (1901); commanded

in China (1906); when Great War broke out, in command of troops in E. Anglia; died from wounds received in action.

**Broca, PAUL** (1824-80), Fr. surgeon, pathologist, anthropologist, and medical author; prof. of surgical pathology in Paris Faculty of Med. (1867); made discoveries concerning aphasia; founded Paris Anthropological Soc. (1859); is regarded as originator of science of craniology.

**Brocade**, silk fabric, sometimes woven with gold or silver thread, in which the decorative portions appear in low relief against the main substance. During the 14th cent. heavy brocades were chiefly manufactured in Italy; at a later date Lyons was a centre of the industry; while at the beginning of the 18th cent. Spitalfields began to produce them.

**Broccoli**, variety of the cauliflower (order Cruciferae), of Ital. origin; introduced into Britain towards close of 17th cent.; edible portion is artificial development of flower stems and abortive blossoms.

**Broch**, name of anc. dry-built circular towers in N. Scotland; best preserved specimens on isl. of Mousa (Shetland); average diameter 60 ft. at base; walls (built hollow) 15 ft. thick at bottom; 28-34 ft. high; probably erected as places of refuge in three first centuries of Christian era; some 400 to 500 of them in Scotland.

**Brock, SIR ISAAC** (1769-1812), Brit. soldier, lieutenant-governor of Upper Canada (1803); put down formidable rising of rebellious troops and conducted cam-

paign against U.S.; received surrender of Hull's army (Aug. 10, 1812); killed while leading his men at battle of Queenstown, Ontario; 'hero of Upper Canada'; monument in St. Paul's.

**Brock, SIR THOMAS** (1847- ), sculptor, educated under Foley; his principal works are *The Moment of Peril*, memorial to Lord Leighton in St. Paul's Cathedral, *Eve*, and *Edward the Black Prince*.

**Brocken**, or **BLOCKSBERG**, central summit of Harz Mts., N. Germany (51° 50' N., 10° 38' E.); alt., 3,733 ft.; one of last strongholds of heathen faith; on Walpurgis night (May 1) supposed to be scene of unholy revelry and devil worship. *Spectre of the Brocken*, magnified shadow of observer thrown on veil of mist by setting sun; phenomenon specially well seen from Brocken; similar appearances from cliffs in fogs over sea and from aeroplanes when shadow projected on clouds; figure surrounded by coloured rings (diffraction effect).

**Brockhaus, FRIEDRICH** (1772-1823), Ger. publisher; completed the issue of the *Konversations Lexikon* (1810-11; 14th ed. 1904), besides numerous other bibliographical and historical works.

**Brockmann, JOHANN FRANZ HIERONYMUS** (1745-1812), Austro-German actor, became leading performer of Germany; played Shakespearean parts; excelled as Hamlet (1777).

**Brockram**, calcareous breccias, Lower Permian, probably anc. screes or talus breccias; found in Vale of Eden, near Kirkby Stephen and Appleby.

**Brockton**, city, Massachusetts, U.S. (42° 2' N., 71° 1' W.);

large shoe factories; woollens, rubber goods, etc. Pop. 56,900.

**Brockville**, riv. port, Ontario, Canada (44° 37' N., 75° 40' W.), on St. Lawrence R.; farming implements; edge tools, gloves, etc. Pop. 9,400.

**Brod**, tn., Croatia-Slavonia, Hungary (45° 8' N., 18° E.), on l. bk. of Save; sometimes called Slavonisch-Brod to distinguish it from Bosna-Brod, on other side of the river; fortified; riv. port; corn, wine, fruit, wood; was starting-point for the Austrian army which occupied Bosnia in 1879. Pop. 7,300.

**Brodeur**, LOUIS PHILIPPE (1862- ), Canadian lawyer; speaker of House of Commons (1901); minister of inland revenue (1904), and of marine and fisheries (1906); represented Canada at Imperial Defence Conference (1909).

**Brodfeld**, or BROTFELD, fertile plain, Hunyad co., Hungary (46° 2' N., 23° 17' E.); scene of Stephen Bathori's victory over Turks (1479); monument.

**Brodict**, par. and tn., Arran, Buteshire, Scotland (55° 36' N., 5° 9' W.); seaside resort. Pop. of par. 1,100.

**Brodie**. (1) SIR BENJAMIN COLLINS (1783-1862), Eng. surgeon; won Copley medal for work on influence of the brain upon the action of the heart; prof. of comparative anatomy and physiology at Royal College of Surgeons; attended George IV. during his last days; first president of the General Medical Council. (2) SIR BENJAMIN COLLINS (1817-80), son of above, English chemist; discoverer of graphon; did important work

on carbon, sulphur, phosphorus, and iodine; prof. of chemistry at Oxford (1865); president of Chemical Soc. (1859 and 1860).

**Brodie**, WILLIAM (d. 1788), Scot. criminal; was a master cabinetmaker in the Edinburgh Lawnmarket (known as 'Deacon Brodie'); committed numerous daring burglaries, for which he was tried and hanged; subject of a play by R. L. Stevenson and W. E. Henley.

**Brodrick**, WILLIAM ST. JOHN. See MIDLETON, VISCOUNT.

**Brody**, tn., Ukraina (50° 6' N., 25° 10' E.), 53 m. E.N.E. of Lemberg by rail; a free commercial city (1779-1879), but its trade had diminished before the Great War, in which it was from Aug. 14, 1914, to July 1916 headquarters of 2nd Austro-Hungarian army; Russians after desperate battle re-entered it July 28, 1916; held by them until the revolution, when seized by Germans. Pop. (mostly Jews) 18,000.

**Broglie**, Fr. noble family who emigrated from Piedmont (1643), when they assumed title of Comtes de Broglie. Distinguished members are: (1) VICTOR MAURICE (1647-1727), marshal of France (1724); (2) FRANÇOIS MARIE (1671-1745), marshal of France (1734), Duc de Broglie (1742); (3) VICTOR FRANÇOIS (1718-1804), marshal of France (1759), became an *émigré* at the Revolution; (4) CHARLES FRANÇOIS (1719-81), distinguished diplomatist; (5) VICTOR CLAUDE (1757-94), *maréchal de camp*, Revolutionist and Jacobin, but executed in the Terror; (6) ACHILLE CHARLES LÉONCE VICTOR (1785-1870), statesman, at-



tempted to keep France both from reaction and from violent democracy; strengthened country by friendship with Britain.

**Brogue.** (1) Shoe of coarse hide or deerskin, formerly worn by Celtic races of Scotland and Ireland. (2) Particular dialectical pronunciation; term usually applied to the Irish mode of pronouncing English words.

**Broiling,** method of cooking meat. See **COOKERY**.

**Broke, SIR PHILIP BOWES VERE** (1766–1841), Brit. naval commander; fought single-ship duel in *Shannon* against *Chesapeake*, which he boarded and captured (June 1, 1813); rear-admiral (1830); his name given to destroyer leader *Broke* (Captain Edward Evans), which along with *Swift* fought and defeated Ger. flotilla of destroyers in Eng. Channel (April 20–21, 1917).

**Broken Hill.** (1) Tn., New South Wales, Australia (31° 58' s., 141° 25' e.), in rich silver-mining district, near Proprietary mine (4,000 employees; output, 1913, £5,000,000). Pop. 28,000. (2) Government station, Luangwa dist., N.E. Rhodesia, S. Africa (15° 40' s., 28° e.); lead and zinc ores; sporting centre. Pop. c. 50.

**Broker,** an agent employed to make bargains in matters of trade or navigation for other people in return for a compensation called *brokerage*. He is, in short, a mercantile agent. A broker is not in possession of the goods which are the subject of the contract. He cannot, as a rule, buy or sell in his own name when acting for other people, and he is not liable to be sued on the contract which he enters into on behalf of

others, unless he appears in the contract to be a principal. When a broker makes a contract for others, he enters the terms of the contract in his own book, and then sends a copy of the entry to both parties. These copies should be identical, otherwise there may be no contract at all, especially, as often happens, when the broker has not entered the terms in his book.

*Insurance brokers* are employed to effect policies of insurance. The underwriter is paid the premium by the broker, who in turn looks to the insured for the premium. He receives the policy of insurance from the underwriter, and it is his duty to see that the policy is drawn up. He must use all diligence in obtaining adjustment and recovering the loss for the insured. If the broker pays the full loss to the insured, not knowing one of the underwriters to be bankrupt, he is prevented by trade custom from recovering it. *Ship brokers* are employed to effect the charter of a ship. They are usually paid a commission of 5 per cent. on the freight by the shipowner. *Stock brokers* are persons who negotiate for the purchase or sale of securities on the Stock Exchange. When any person wishes to buy or sell shares or stock he employs a broker, who in turn sells the shares to, or buys the shares from, a stock-jobber.

**Bromberg, tn., Posen, Poland** (53° 7' n., 18° e.), agricultural centre; became Prussian in 1815. Pop. 57,000. Bromberg Canal (16 m.) links riv. Brahe with the Netz, and thus effects communication between the Oder and the Vistula (opened 1774).

**Brome, RICHARD** (d. 1652), English dramatist; servant, and afterwards friend, of Ben Jonson; wrote about fifteen comedies, including *The Northern Lass*, *The Court Beggar*, *The City Wit*, *A Jovial Crew*, etc. His *Collected Works* were pub. in 1873.

**Bromeliaceæ**, order of monocotyledonous plants, including the pine-apple (*Ananassa sativa*) and other valuable fibre-yielding plants (*Bromelia*, *Tillandsia*); found in tropical America, W. Africa, E. Indies.

**Bromine** (Br.), non-metallic element, chemically similar to chlorine, heavy, dark-red liquid giving off red, evil-smelling (Gr. *brōmos*, 'a stench'), poisonous vapour; atomic weight 80; b.p. 59–60° C.; solidifies at –7° C.; sp. gr. 3.19; soluble in water, solution having bleaching powers. Bromine occurs combined with potassium and sodium in sea and some mineral waters and salt beds. Bromine and its compounds are used in photography, medicine (those of potassium and sodium as valuable sedatives), and in the manufacture of coal-tar colours.

**Bromley**, mrkt. tn., Kent, England (51° 24' N., 0° 1' E.), birthplace of Francis Atterbury, Bishop of Rochester. Pop. 33,700.

**Brompton**, dist., W. London, part of Kensington contains Oratory transferred from King William Street, Strand.

**Brömsebro**, hamlet, Sweden (56° 19' N., 16° 3' E.); till 1650 formed boundary between Sweden and Denmark; gave its name to two treaties (1541 and 1645).

**Bromsgrove**, mrkt. tn., Worcestershire, England (52° 22' N., 2°

4' W.); nails and buttons; many picturesque old houses; Gothic church with monuments of the Talbots (earls of Shrewsbury). Pop. 9,000.

**Bromus**, genus of forty species of grasses (N. temperate regions), about ten (the *brome* grasses) occurring in Britain; several species important agriculturally.

**Bronchi**. See RESPIRATORY SYSTEM.

**Bronchiectasis**, a cylindrical or saccular dilatation of the bronchial tubes, most often occurring with chronic bronchitis or chronic pneumonia.

**Bronchitis**, inflammation of the mucous membrane of the bronchial tubes, the most common disease of the lungs in the Brit. Isles, is usually due to a chill. It is a frequent accompaniment of many specific fevers, especially measles and typhoid, and of many other lung diseases, or it may result from the spreading of laryngitis. Certain occupations which expose individuals to a constant dusty or otherwise irritating atmosphere—*e.g.*, masons, cotton-millers, chemical manufacturers—predispose towards bronchitis. The symptoms are pain behind the sternum, frequent cough, shortness of breath, slight rise of temperature; and an attack usually lasts one to three weeks. The treatment is, in the first stage, to promote the secretion; when it is free, stimulate the mucous membrane to get rid of it, and then improve the general condition with tonics, cod-liver oil, etc.

**Broncho**. See HORSE FAMILY.

**Bronchocele**. See GOITRE.

**Brongniart, ADOLPHE THEO-**

DORE (1801-76), Fr. botanist; director of Museum of Natural History (1833); wrote important work on fossil plants (1828-37); founded and was first president of Fr. Botanical Soc. (1854).

**Bronkhorst Spruit**, stream, 40 m. E. of Pretoria, Transvaal, S. Africa (25° 47' S., 28° 45' E.); scene of disastrous attack by Boers on 250 men of 94th Regiment on Dec. 20, 1880, before declaration of war.

**Brönsted**, PETER OLUF (1780-1842), Dan. archæologist; explored Sicily and Ionian Islands (1821); made exhaustive study of the Elgin Marbles (1826); director of univ. of Copenhagen (1842); two vols. of his researches in Greece appeared in 1826-30.

**Bronte**, mrkt. tn., Catania, Sicily (37° 47' N., 14° 49' E.), on W. slope of Mt. Etna; dates from time of Charles V.; estates of monastery granted to Nelson (1799) with title of Duke of Bronte. Pop. 20,300.

**Brontë**, CHARLOTTE (1816-55), EMILY (1818-48), and ANNE (1820-49), Eng. novelists; were three daughters of Rev. Patrick Brontë, incumbent of Haworth, a wild moorland parish in the West Riding of Yorkshire. The children were left motherless at an early age, and the father, a man of hard nature and eccentric habits, lavished what affection he had for his offspring upon his only son, Branwell, who turned out a sot and a wastrel, and came to an early grave. It became Charlotte's business to 'mother' the family, and in their lonely life the three girls found solace in literary composition. Their first venture

was a volume of *Poems*, under the pseudonyms Currer, Ellis, and Acton Bell (1846), which cost them £50, and only one or two copies were sold.

Notwithstanding this failure the sisters next applied themselves to novel-writing. Charlotte wrote *The Professor*, which, however, proved too short for the publishers to whom it was offered, and it did not appear in print until after her death. In the meantime she wrote *Jane Eyre*, which was pub. in 1847, and at once achieved a popular success. It was followed by *Shirley* in 1849, and by *Villette* in 1852. In 1854 she married her father's curate, Rev. A. Nicholls, but died in the following year. Emily was the author of *Wuthering Heights* (1848); and Anne published *The Tenant of Wildfell Hall* and *Agnes Grey* (1848). The novels of the Brontë sisters have held a secure place in Eng. fiction for more than seventy years, and there is little evidence that their popularity is likely to diminish in the future.

Mrs. Gaskell, *Life of Charlotte Brontë*; also later ones by Birrell, Shorter, and Madame Duclaux; Miss Flora Masson, *The Brontës* (1912). The best criticism is Swinburne's *Note on Charlotte Brontë* (1877).

**Brontometer** ('thunderstorm measurer'), a combination of meteorological instruments for use in study of thunderstorms; on a clockwork drum various pens register the velocity of the wind, rainfall, and atmospheric pressure; other pens, worked by keys, enable observer to record exact time of thunder and

lightning, and duration and intensity of hail.

**Brontosaurus**, extinct reptile, one of the massive Dinosaurs; *B. excelsus*, of Upper Jurassic of Wyoming, U.S., had long, flexible neck, relatively small head, and long, powerful tail; length, 55 ft.

**Brontotherium**, gigantic extinct member of the UNGULATA.

**Bronx**, THE, most northerly of the five boroughs, New York city, U.S. Area, 39½ sq. m.; pop. 430,900.

**Bronze**, alloy of copper (80 to 90 per cent.) and tin (10 to 20 per cent.), with frequently addition of zinc and lead replacing part of tin, sometimes also of phosphorus, silicon, or manganese; used for coins, bells (on account of its resonance), and for statues.

**Bronze Age**, the stage of human culture when bronze supplanted stone as the material for weapons, utensils, etc.; in Britain, probably from c. 1800 to c. 900 B.C.; many relics of the age have been found.

**Bronzite**, silicate of magnesia and ferrous oxide, a rock-forming mineral belonging to pyroxene group; has lustre resembling tarnished bronze.

**Bronze-wing**, name of pigeons of genus *Phaps* found only in Australia, but widely distributed there; flight swift and strong; excellent for eating.

**Brooch** (Fr. *brocher*, to pierce), ornamental device for fastening two articles or ends together, the pin and hook being usually concealed behind an ornamental plate, but sometimes an integral part of the ornament, as in the Irish brooch. The Tara

brooch is formed from hollow circle cut across by great pin, which attaches by piercing without a hook, and stones are set into border of circle among interlaced filigree work. The brooch was a matter of high art with the Greeks, who often ended both sides with a pin; the harp shape is characteristic of Roman *fibula*. The Celtic hollow circle, crossed by pin and bordered by a design of large stones, displaced in 14th cent. the Eng. embossed disk, but the latter was parent of modern brooch: rage for cameo brooches marked 18th cent.

**Brooke**, HENRY (1703-83), Irish author; trans. two books of Tasso's *Jerusalem Delivered* (1738); wrote a tragedy, *Gustavus Vasa*; and is now chiefly remembered by his novel, *The Fool of Quality* (1765-70). See *Life* by Baker (1906).

**Brooke**. (1) SIR JAMES (1803-68), Rajah of Sarawak (1841); British colonial governor; aided sultan's forces to reduce revolted tribes of Sarawak (1839-41); ruled as rajah (1841-6); island of Labuan purchased for Brit. colony, and Brooke made governor (1847); charged with maladministration, but exonerated (1851), and the independence of Sarawak recognized by Brit. Government. (2) CHARLES ANTONY BROOKE (1829-1917), assumed throne under name of CHARLES JOHNSON BROOKE on death of uncle. General administration followed lines of uncle, and his rule was successful example of peaceful and beneficent despotism. Sarawak became Brit. protectorate (1888).

(3) **CHARLES VYNER BROOKE** (1874— ), succeeded his father as rajah in 1917.

**Brooke, RUPERT** (1887–1915), Eng. poet; travelled on Continent, U.S., Canada, and South Seas (1913). At outbreak of Great War joined Royal Naval Division; in Antwerp Expedition (Oct. 1914); with Mediterranean Expeditionary Force (Feb. 1915); died on Fr. hospital ship at Lemnos. His *Letters* and his *Poems* pub. 1918 in collected edition with memoir. Remarkable poetic gift; output small, but of high rank; a master of the sonnet form.

**Brooke, STOPFORD AUGUSTUS** (1832–1916), Irish clergyman and man of letters; seceded from Church of England and became Unitarian minister; wrote *Life and Letters of F. W. Robertson*, *Primer of Eng. Literature*, etc.

**Brook Farm** (c. 42° 18' N., 71° 10' W.), dist. near W. Roxbury, Massachusetts, U.S., where an attempt was made at founding a Socialistic settlement in 1841 by George Ripley and others. Members had to do certain amount of work daily; colony failed, and was dissolved in 1847. Site now occupied by Lutheran orphanage.

**Brookfield, CHARLES HALLAM ELTON** (1857–1913), playwright, on the stage with the Bancrofts; wrote forty or fifty plays, including *Nearly Seven*, *The Lady Burglar*, *The Burglar and the Judge*; he was joint-examiner of plays (1911–13).

**Brookite**, mineral, titanium dioxide (TiO<sub>2</sub>), occurring in right prismatic transparent to opaque yellowish red crystals in decomposing granite and gneiss.

**Brooklime**, common name for *Veronica beccabunga*; found at margins of brooks, ditches, etc.; bright blue flowers; leaves said to have antiscorbutic qualities.

**Brookline, tn.**, Massachusetts, U.S. (42° 20' N., 71° 7' W.); residential suburb of Boston. Pop. 27,800.

**Brooklyn**, bor. of New York city (40° 40' N., 74° W.), western end of Long Island and connected with mainland by bridges; favourite residential quarter; beautiful parks, of which Prospect Park is much the largest; many educational institutions, of which the most remarkable is the Institute of Arts and Sciences; over 130 grammar schools, some good private schools and colleges, and many excellent libraries. Public buildings include white marble city hall, state arsenal, museum; U.S. navy yard is here, and a marine hospital; important trading and manufacturing centre; flour mills, sugar refineries, brass works, and breweries. Brooklyn was founded by Walloon colonists in 1636; site of battle during War of Independence; was incorporated with New York in 1898. Pop. 1,358,700.

**Brooklyn Bridge.** See under BRIDGES.

**Brooks, CHARLES WILLIAM SHIRLEY** (1816–74), Eng. novelist; educated for the law, but adopted journalism, and was on the staff of *Morning Chronicle*, *Illustrated London News*, and *Punch*, succeeding Mark Lemon as editor of the latter (1870), and started in it well-known series of satirical articles, 'The Essence of Parliament.' His

novels include *Aspen Court*, *The Gordian Knot*, *The Silver Cord*, and others. See Layard's *A Great 'Punch' Editor* (1907).

**Brooks**, PHILLIPS (1835-93), Amer. bishop, and author whose best-known works are *The Influence of Jesus and Literature and Life*. A dominating force among all classes in the city of Boston and in Massachusetts.

**Brooks**, WILLIAM KEITH (1848- ), Amer. zoologist; organized Chesapeake zoological laboratory, and took large part in the artificial development of the American oyster; wrote *The Foundations of Zoology*, etc.

**Brooks's Club**. See ALMACK'S.

**Brookweed**, common name for genus of herbs, *Samolus*, of primrose family; found mostly in southern hemisphere; *S. valerandi* is found in Britain, especially near the sea.

**Brookwood**, dist., Surrey, England (51° 18' N., 0° 37' W.); extensive cemetery (2,000 ac.); crematorium; asylum.

**Broom**, evergreen shrub, *Cytisus scoparius*; common on sandy soil; large, yellow, papilionaceous flowers; twigs used for brooms and thatching roofs, and juice of tops medicinally as diuretic and laxative; many foreign species form handsome garden and greenhouse plants.

**Broom Corn**, or BROOM MILLET, a variety of *Sorghum vulgare*; flowering shoots in bunches, long, wiry, straight, and nearly erect, forming the 'brush' or whisk; used for making whisk brushes; supplies chiefly from the U.S. and Italy.

**Broome**, seapt., Dampier Land, Kimberley, W. Australia (17°

56' S., 122° 13' E.); pearl fishing; cable station. Pop. 900.

**Broom Rape** (*Orobanche*), bright-coloured plants with scales instead of green leaves; parasitic on roots of other plants; chiefly in temperate regions.

**Broom Root**, or FRENCH WHISK, a coarse fibrous material made of washed sun-dried roots of a grass, *Chrysopogon gryllus*; superior to Mexican whisk; used for making carpet brooms and clothes brushes; it comes from Italy, Hungary, and S. France.

**Brora Beds**, strata occurring at Brora, Sutherlandshire, Scotland; of same geological age as Yorkshire Oolites; it contains a seam of coal.

**Brorson**, HANS ADOLF (1694-1764), one of the four great masters of Dan. hymnody; wrote *Troens rare Klenodie*, etc.

**Broseley**, tn., Shropshire, England (52° 36' N., 2° 29' W.); pottery; famous for tobacco pipes. Pop. 3,500.

**Brosimum**, genus of tropical Amer. trees of the order Moraceæ—e.g., the cow-tree of Venezuela; substance like milk exudes from cut trunk; used for food; on boiling, a wax separates after cooling, like beeswax; snake-wood is got from *B. aubletii* of S. America and Trinidad.

**Brotherhood Movement**. See under P.S.A.

**Brough**, ROBERT (1872-1906), Scot. artist; was a painter of great promise; died from injuries received in a railway accident. His *Fantaisie* and *Folie* is in the Tate Gallery; and the Venice public gallery contains two fine examples of his work.

**Brougham and Vaux**, HENRY PETER BROUGHAM, 1ST BARON

(1778–1868), English lord chancellor; *b.* Edinburgh; educated at Edinburgh High School and Univ.; admitted to Scot. bar (1800); co-operated in founding *Edinburgh Review* (1802), and contributed eighty articles to first twenty numbers; entered at Lincoln's Inn (1803); settled in London (1805); and was called to Eng. bar (1808). Entering Parliament (1810) he was soon regarded as a possible leader, and carried a bill making slave-trading felony. He was without a parl. seat, 1812–16. Returned for Winchelsea (1816), he became a prominent Opposition member, defeated Income Tax Bill, and zealously advocated extension of popular education.

As Queen Caroline's attorney-general (1820), his management of her case won his fame. He introduced a great scheme of law reform (1828), was returned for York (1830), and in Nov., although Whig leaders would have gladly omitted him from the cabinet, he was made lord chancellor. Whig Government broke up in 1834, and on its reconstruction (1835) Brougham was excluded. He died at Cannes. Versatile, egotistical, turbulent, he is chiefly remembered as a law reformer and as an author.

J. B. Atlay, *Victorian Chancellors* (1906); Henry, Lord Brougham, *Brougham's Life and Times* (1871); collected edition of his works, 2 vols. (1855–61; 2nd ed. 1872–3).

**Broughton, JOHN CAM HOEHOUSE, BARON** (1786–1869), politician; born at Bristol; M.P. for Westminster (1820); supported

Reform party in Parliament; secretary for war (1832); confined himself mainly to literary work after 1852; had two great admirations, one for Napoleon and another for his friend Byron. He arranged poet's funeral (1824), and carried out burning of his memoirs. See his *Recollections*.

**Broughton, RHODA** (1840–1920), English novelist; wrote numerous works of fiction, including *Cometh up as a Flower*, *Second Thoughts*, *Dear Faustina*, *Between Two Stools*, *The Devil and the Deep Sea*.

**Broughty-Ferry**, par. and tn., Firth of Tay, Forfarshire, Scotland (56° 28' N., 2° 52' W.); wat.-pl.; fortified castle (15th cent.); now incorporated with Dundee. Pop. 11,050.

**Broussa.** See BRUSA.

**Brouwer, ADRIAN** (1606–38), Dutch artist, many of whose works are at Munich. *A Sleeping Boor* is in the Wallace Collection.

**Brower, JACOB VRADENBERG** (1844–1905), Amer. archæologist, explorer, and author, explored the river known as Nicolle's Infant Mississippi to its source (1889), and in 1894 he discovered in Itasca Lake an ancient village site. He wrote *The Mississippi and its Source* (1893).

**Brown, MOUNT**, peak, Rocky Mts., Canada (52° 25' N., 118° 17' W.); alt. 9,055 ft.

**Brown, ALEXANDER CRUM** (1838– ), prof. of chemistry, Edinburgh Univ. (1869–1908); is a doctor of med., LL.D. of the four Scot. universities, and president of the Chemical Soc., London.

**Brown, SIR ARTHUR WHITTEN** (1886– ), British airman, of

Amer. descent received commission in Manchester Regiment and served in France (1915); transferred to Royal Flying Corps as observer; was wounded and taken prisoner; interned Switzerland and repatriated (Dec. 1917). With Sir John Alcock, he was first airman to make a direct transatlantic flight in aeroplane (June 1919). He was knighted in recognition of this wonderful feat. See ATLANTIC FLIGHT.

**Brown, FORD MADOX** (1821-93), Eng. artist; son of a navy purser; displayed a remarkable talent for realistic treatment of historical episodes, some of his best-known pictures being *Christ washing Peter's Feet*, *Romeo and Juliet*, *Don Juan*, *Shakespeare, Chaucer at the Court of Edward III.*, etc. In some of his pictures he was influenced by the 'Pre-Raphaelite' movement, of which he was the pioneer, though not a member of the brotherhood. Much of his best work is to be seen in Manchester Art Gallery and in Town Hall (which contains twelve historical frescoes).

His son, **OLIVER MADOX BROWN** (1855-74), showed astonishing precocious genius, exhibited pictures, and pub. a novel, *Gabriel Denver*. His grandchildren are the distinguished writers **FORD MADOX HUEFFER**, author of *Ancient Lights*, and **OLIVER MADOX HUEFFER** (pseudonym, 'Jane Wardle').

**Brown, HON. GEORGE** (1818-80), Canadian reforming statesman and politico-religious writer; helped to bring about federation of British America.

**Brown, GEORGE DOUGLAS** (1869-1902), Scot. novelist; wrote

*The House with the Green Shutters* (1901), a counterblast to the sentimental 'kailyard' school. A medallion tablet, with inscription, was erected to his memory in Nov. 1919 in Ochiltree, Ayrshire, his native place.

**Brown, GEORGE LORING** (1814-89), Amer. landscape painter of class. school. Two of his paintings, *The Crown of New England* and *The Bay of New York* were bought by King Edward VII.

**Brown, HORACE T.** (1848- ), most outstanding personality in the brewing world during the past fifty years; has written on *The Nitrogen Question in Brewing*, etc.; LL.D. (hon. Edin.) and F.R.S.

**Brown, JOHN** (1800-59), Amer. abolitionist; in 1855 played important part in 'Pottawatomie Massacre' during border strife in Kansas and Missouri; organized plot to free slaves of Virginia, and in October 1859 seized Harper's Ferry; wounded, tried by court-martial, and hanged. He is the subject of popular song during Civil War,—

'John Brown's body lies a-mouldering  
in the grave,  
But his soul goes marching on.'

**Brown, JOHN** (1810-82), Scot. physician and essayist; author of *Horæ Subsecivæ* (1858-61), *Rab and His Friends* (1859), *Marjorie Fleming* (1863), *John Leech and other Papers* (1882). *Life*, by J. T. Brown (1903).

**Brown, SIR JOHN** (1816-96), English steel manufacturer, invented the conical steel buffer spring (1848); started the Atlas Works, Sheffield, where up to 1863 he had sheathed with iron armour three-fourths of the whole British navy.



**Brown, LANCELOT** (1715–83), best known as ‘Capability Brown’ b. Kirkharle, Northumberland; was the founder of the modern English style of landscape gardening. He laid out the grounds at Kew and Blenheim.

**Brown, PETER HUME** (1850–1919), Scot. historian; ed. of the *Register of the Privy Council of Scotland* (1898); prof. of ancient Scot. history in Edinburgh Univ. from 1901; historiographer-royal from 1908; as an historian eminently impartial and ‘safe’; at best in *Life of George Buchanan* (1890); other works include *Early Travellers in Scotland*, *Life of John Knox*, *History of Scotland*, *The Youth of Goethe*.

**Brown, ROBERT** (1773–1858), Scot. botanist; b. Montrose; naturalist on scientific expedition to New Holland (1801–5); president Linnean Soc. (1849–53); keeper botanical collection at Brit. Museum (1827–58). Was described by Humboldt as ‘facile princeps botanicorum.’

**Brown, THOMAS** (1778–1820), Scot. philosopher; succeeded Dugald Stewart as prof. of moral philosophy at Edinburgh, where he achieved great popularity as a lecturer. His *Lectures on the Philosophy of the Human Mind* had an extensive circulation. He also wrote a considerable amount of poetry.

**Brown, THOMAS EDWARD** (1830–97), Manx poet and schoolmaster; assistant-master at Clifton Coll. (1863–92); author of *Fo’c’sle Yarns* (1881), *The Doctor and other Poems* (1887), *The Manx Witch* (1889), *Old John and other Poems* (1893); *Collected Poems* (1900). Many of his racy

narrative poems are written in the Manx dialect.

**Brown, SIR WILLIAM** (1784–1864), Liverpool linen manufacturer and banker, erected public library and museum at Liverpool; M.P. for S. Lancashire (1846).

**Browne, CHARLES FARRAR** (1834–67), better known as ‘Artemus Ward.’ His lecture tours through America and Europe everywhere gained for him great popularity because of their quaint raciness and originality. His sketches, *Artemus Ward, his Book* (1862), *Artemus Ward in London* (1867), etc., were subsequently collected into one vol. His *Complete Works* were issued in 1875.

**Browne, EDWARD GRANVILLE** (1862– ), Oriental scholar, prof. of Arabic, Cambridge Univ.; his works include *The Literary History of Persia*, and *Materials for the Study of the Babi Religion*.

**Browne, EDWARD HAROLD** (1811–91), Bishop of Winchester (1873); his best-known works are *The Messiah*, and *The Pentateuch and Elohistic Psalms*.

**Browne, HABLÔT KNIGHT** (1815–82), Eng. artist; better known as PHIZ; b. London, of Huguenot descent; apprenticed to the engraver Finden; meeting with Dickens in 1836, he was pressed into service as an illustrator of the *Pickwick Papers*, with which work both author and artist achieved fame. He was also the illustrator of *David Copperfield*, *Dombey and Son*, *Martin Chuzzlewit*, and *Bleak House*, besides novels of Ainsworth, Lever, and Smedley.

**Browne, SIR JAMES CRICHTON-** (1840– ), lord chancellor’s vis-

itor in lunacy since 1875; has written works on mental and nervous diseases, education, etc.

**Browne, MAXIMILIAN ULYSSES, COUNT VON** (1705-57), Austrian general; field marshal (1753); idolized by soldiery; died from wounds received while leading charge at the battle of Prague; name given (1888) to an Austrian infantry regiment.

**Browne, ROBERT** (1550-1630), founder of extreme Puritan, anti-episcopalian sect especially obnoxious to Queen Elizabeth. The *Brownists* were partly suppressed by Whitgift's Court of High Commission, but secretly formed first Dissenting body, that of the Independents.

**Browne, SIR SAMUEL JAMES** (1824-1901), Brit. general, served through the Indian Mutiny, and received the v.c. The natives called him 'Sam Brun sahib,' and he invented the 'Sam Browne belt'; commanded the Khaibar column in the Afghan War (1880).

**Browne, SIR THOMAS** (1605-82), Eng. author and physician; practised med. at Norwich (1637); author of *Religio Medici* (1643), *Pseudodoxia Epidemica* (1646), *Hydriotaphia or Ūrn-Burial* (1658). Amid the stirring affairs going on around him in England, he had a singularly detached and contemplative mind, which he exhibits in his works. They are written in an elaborate and rich style. *Life*, by Gosse (1905); *Sir Thomas Browne: an Appreciation*, by Whyte (1898).

**Browne, THOMAS A.** See **BOLDREWOOD, ROLF.**

**Brownhills**, urban dist., tn., Staffordshire, England (52° 40' N., 1° 55' W.); important coal-mining centre. Pop. 16,800.

**Brownian Movements**, rapid vibratory movements observed in microscopic particles suspended in water; first described by Robert Brown, botanist, in 1817; also called *diapedesis*.

**Brownie.** See **FAIRIES.**

**Browning, ELIZABETH BARRETT** (1806-61), Eng. poetess; daughter of Edward Moulton-Barrett, who had inherited valuable plantations in Jamaica. She developed a remarkable aptitude for study at a very early age, taking especial delight in Gr. poetry and philosophy. At the age of ten she began to write verse, and her first vol. of poetry, *An Essay on Mind, and other Poems*, was pub. when she had reached the age of nineteen. It was followed by *Prometheus Bound* (1833), *The Seraphim and other Poems* (1838), and two vols. of *Collected Poems* (1844), including *The Drama of Exile*, *The Vision of Poets*, and *Lady Geraldine's Courtship*. In the following year she first met her future husband, Robert Browning, whose poetry she had already admired. They were married privately in 1846, after which they went to Pisa, and later settled at Florence.

Mrs. Browning's health had always been delicate, but it greatly improved after her marriage, and she applied herself with renewed energy to her literary work. On March 9, 1849, her only child, Robert Barrett Browning, was born. *Sonnets from the Portuguese* appeared in 1850, *Casa Guidi Windows* (1851), and her great poem, *Aurora Leigh* (1856). In 1860 she published a collected edition of her poetical

work, under the title of *Poems before Congress*. Shortly afterwards her health began rapidly to decline, and she died in the following year. Her work is often slipshod, and her rhyming far from perfect; but setting aside these blemishes, Mrs. Browning is undoubtedly the greatest of English female poets, while Dr. Furnivall claimed that she was 'the greatest poetess whom the world has yet seen.' Certain it is that *Aurora Leigh*, *Lady Geraldine's Courtship*, and many of her shorter lyrical pieces, have secured a lasting place in Eng. literature.

J. H. Ingram, *E. B. Browning* (Eminent Women Series, 1888); Lubbock, *Mrs. Browning in her Letters* (1906).

**Browning, ROBERT** (1812-89), Eng. poet; *b.* London; son of Robert Browning, an official in the Bank of England; educated privately and at University Coll.; pub. his first poem, *Pauline*, anonymously in 1833. Two years later he issued *Paracelsus*, a long dramatic poem, which met with little success, but found appreciative readers in Wordsworth, Carlyle, and other men of letters. In 1837 Macready produced his *Stratford*, and in 1840 *Sordello* was published. These were followed by *Bells and Pomegranates* (1841), *A Blot on the 'Scutcheon* (1843), *Luria*, and *A Soul's Tragedy* (1846). In the latter year he married Elizabeth Barrett, and went to live in Italy, returning to England after his wife's death, in 1861. *Men and Women* appeared (1855), *Dramatis Personæ* (1864), *The Ring and the Book* (1868-9), *Balaustion's Ad-*

*venture* (1871), *Fine at the Fair* (1872), *Red Cotton Night-cap Country* (1873), *The Inn Album* (1875), *Pacchiarotto* (1876), *La Saisiaz* (1878), *Dramatic Idylls* (1879-80), and *Asolando* (1889) was pub. on his death-day.

The obscurity of his earlier poems, such as *Sordello*, and the general ruggedness of diction of the greater part of his work, have undoubtedly militated very strongly against Browning's popularity, but it has long been recognized that he belongs to the hierarchy of Eng. poets. What he lacks in poetical form he makes good in thought and vigour of expression. Beside his greatest work the correct Victorian style of Tennyson appears somewhat effeminate, while the passionate music of Swinburne seems empty of meaning. If Browning could have combined something of the finer qualities of both these writers, his fame would undoubtedly have been higher; but it is certain that his profound knowledge of the mind and heart of man, his fearless optimism, his manliness, his tenderness, and his humour account for the high appreciation in which he is now held.

Mrs. Orr, *Life and Letters of Browning* (1891); E. Gosse, *Robert Browning* (1890); Wm. Sharp, *Robert Browning* (Great Writers Series, 1890); Stopford Brooke, *Poetry of Robert Browning* (1902); and G. K. Chesterton, *Browning* (English Men of Letters, 1908).

**Brown-Séquard, CHARLES EDWARD** (1817-94), neurologist and physiologist; *b.* Mauritius; studied med. in Paris; physician to

National Hospital for Paralyzed and Epileptic, London (1859); prof. of physiology and neuropathology, Harvard (1864); prof. in Ecole de Médecine, Paris (1869); returned to practise in America (1873); prof. of experimental med. in Collège de France, Paris (1878); did valuable research on spinal cord, internal secretions, etc.

**Brownson, ORESTES AUGUSTUS** (1803–76), Amer. Socialist and religious writer; founded *Boston Quarterly Review* (1838), afterwards *Brownson's Quarterly Review* (1844–64); praised as philosopher by Comte.

**Brown Spar**, 'pearl stone,' name of certain crystalline varieties of dolomite or magnesian limestone tinged with oxide of iron; lustre, pearly.

**Brownsville**, city and river port, Texas, U.S. (25° 53' N., 97° 26' W.), near mouth of Rio Grande; important market for live stock, rice, sugar-cane, etc.; bombarded by Mexicans in May 1846. Pop. 10,500.

**Broxburn**, tn., Linlithgowshire, Scotland (55° 56' N., 3° 28' W.); coal mines; centre of shale-oil industry. Pop. 9,600.

**Brožík, WENCESLAW** (1851–1901), Czech painter; prof. at Prague Academy of Arts (1891); numerous works, best being *John Huss*, and *George Podebrad elected as Bohemian King*.

**Bruay**. (1) Tn., Pas-de-Calais, France (50° 28' N., 2° 32' E.); in rich coal-mining district. Pop. 18,400. (2) Vil., Nord, France (50° 24' N., 3° 33' E.); coal; occupied by Germans during Great War. Pop. (comm.) 7,800.

**Bruce**, or **BRUS**, Scot. dynasty;

ancestor came over with Conqueror from Normandy; Robert de Bruis received land grant in Yorkshire; branch obtained lordship of Annandale, Scotland; from latter descended ROBERT DE BRUS, claimant of Scot. crown, and his sons, ROBERT I. and EDWARD BRUCE (d. 1318), the latter of whom assisted in establishing Scot. independence, was crowned King of Ireland (1316), and killed at Dundalk. Robert Bruce's son reigned as DAVID II.; his grandson as ROBERT II., first of Stewart line.

**Bruce, JAMES** (1730–94), Scot. African explorer and archæologist; author of *Travels*, etc.; explored Abyssinia; discovered source of Blue Nile (1768–70) and (1772) its confluence with White Nile (the true source).

**Bruce, JOHN COLLINGWOOD** (1805–92), antiquary, ed. of the Newcastle-on-Tyne Soc. of Antiquaries *Journal*; wrote valuable books on the Roman Wall.

**Brucea**, genus of the family Simarubaceæ, related to orange and lemon group; named after JAMES BRUCE, Abyssinian traveller; many species native in Abyssinia; seeds used as cure for dysentery.

**Bruch, MAX** (1838– ), Ger. musician, succeeded Benedict as conductor of the Liverpool Philharmonic (1880–2). He composed music for Schiller's *Jungfrau von Orleans*, and many other pieces, including *Odyssey*.

**Bruchesi, PAUL** (1855– ), R.C. Archbishop of Montreal; he did much to stimulate the loyalty of the Canadian Roman Catholics during the Great War.

**Bruchsal**, tn., Baden, Ger-

many (49° 8' N., 8° 35' E.); tobacco, paper, machinery, beer; Peasants' War broke out here (16th cent.); burned by French (1676 and 1698). Pop. 15,400.

**Brucine**, alkaloid accompanying strychnia in *NUX VOMICA*.

**Bruck.** (1) *B. AN DER LEITHA*, tn., Lower Austria, Austria (48° 3' N., 16° 47' E.); military camp. Pop. 5,900. (2) *B. AN DER MUR*, tn., Styria, Austria (47° 25' N., 15° 16' E.); Gothic church (15th cent.); wrought-iron fountain (1626); iron. Pop. 8,300.

**Brückenau**, spa dist., Lower Franconia, Bavaria (50° 19' N., 9° 47' E.), 35 m. N. of Würzburg; carbonic acid waters. Pop. 2,100.

**Bruges**, city, cap. of Flanders, Belgium (51° 13' N., 3° 14' E.), 63 m. N.W. of Brussels and 8 m. inland from North Sea; connected by ship canal (230 ft. wide and 26½ ft. deep) with Zeebrugge; flourishing commercial centre in 13th cent.; retains mediæval appearance; fine churches, including Notre Dame; Les Halles; famous belfry, 353 ft. high; chief industry, lace making. Pop. 58,000. In Great War, after fall of Antwerp (Oct. 9, 1914), Belgian and Brit. forces fell back on Bruges, where part of Rawlinson's division which had landed at Ostend was concentrated. Bruges was left an 'open city' and occupied by the Germans (Oct. 14). It was compelled to maintain the Ger. garrison. As an enemy base for submarines, Bruges locks were frequently bombed by Allied airmen (see ZEEBRUGGE). In the final Allied advance the converging move-

ments of Belgian and Brit. forces under King Albert caused the Germans to evacuate the city, which was entered by Belgians on Oct. 9, 1918.

**Brugg**, mediæval tn., Switzerland (47° 29' N., 8° 12' E.); ruined castle of Habsburg (1020) in vicinity. Pop. 3,800.

**Bruhns**, KARL CHRISTIAN (1830-81), Ger. astronomer, prof. of astron. and director of observatory, Leipzig; discovered six new comets; erected twenty-four meteorological stations in Saxony; pub. valuable *New Manual of Logarithms* (1870), etc.

**Brulard**, JEAN ARMAND (1856- ), Fr. soldier; took part in colonial campaigns—Algeria, Madagascar, etc.; helped to reorganize Moorish army; served as general in Great War.

**Brulov**, CONSTANTIN PAVLOVICH (1799-1852), Russian artist; prof. Petrograd Academy; chief works: *Destruction of Pompeii*, *Death of Inez de Castro*, and his *Assumption* (Petrograd Cathedral).

**Brumaire** ('fog-month'), second month in Fr. republican calendar (Oct. 22-Nov. 20), promulgated in 1793. On 18th Brumaire of eighth year of republic (Nov. 9, 1799) Napoleon became First Consul.

**Brummell**, GEORGE BRYAN. See BEAU.

**Brummen**, village, Gelderland, Netherlands (52° 5' N., 6° 10' E.), 4 m. S.W. of Zutphen; healthful climate; favourite place of residence. Pop. (comm.) 7,600.

**Brun**, JOHAN NORDAHL (1745-1816), Dan. poet with Norweg. sympathies; his hymns and odes spurred Norway to achieve her independence (1814); Bishop of Bergen (1803).

**Brunanburh**, an unidentified place, possibly in N. of England or in Cheshire, where the united Saxons under Athelstan defeated the Danes, Welsh, and Scots in 937; poem in A.S. Chronicle.

**Brunck**, RICHARD FRANÇOIS PHILIPPE (1729-1803), Fr. classical scholar; famous for his edition of Sophocles (1786), with Lat. trans.; also editions of Virgil, Plautus, Terence, Anacreon, and other authors.

**Brundrit Temperature Balance**, for marine boilers, a wrought-iron cylindrical chamber suspended vertically inside boiler above furnace level by rods attached to boiler stays; a pipe leads from bottom of chamber almost to bottom of shell; a second pipe rises from near bottom of chamber to point 6 in. above high-water level; heated water in chamber is partly discharged through upper pipe, its place being immediately taken by cold water rising through lower pipe.

**Brundusium**. See BRINDISI.

**Bruneau**, ALFRED (1857- ), Fr. composer, chiefly of operas, which include *Kerim*, *Le Rêve*, *Messidor*; has also written collections of songs, *Lieds de France* and *Chansons à danser*, besides overtures, symphonies, etc.

**Brunei**, state, N.W. Borneo (4° 18' N., 114° 30' E.); coal; exports sago, wild rubber, petroleum; independent state till 1888, when it became a British protectorate; has been administered by British resident since 1906. Chief tn. Brunei. Area, c. 4,000 sq. m.; pop. state, c. 22,000; tn. 10,000.

**Brunel**, ISAMBARD KINGDOM (1806-59), Eng. civil engineer;

son of Sir Marc Isambard Brunel; b. Portsmouth; designed (1831) Clifton Suspension Bridge (completed 1864); engineer to Great Western Ry. (1833-46); constructed *Great Western*, first steamship to cross Atlantic (1838), and *Great Eastern* (launched 1858); also docks at Monkwearmouth (1831), Plymouth, and Milford.

**Brunel**, SIR MARC ISAMBARD (1769-1849), inventor and civil engineer; b. Normandy; on account of royalist opinions was expelled during Fr. Revolution; settled in U.S.; established arsenal and cannon foundry at New York; coming to England (1799) was employed by government in construction of his machine for making pulley blocks; built Thames tunnel (opened 1843), assisted by his son.

**Brunelleschi**, FILIPPO (1379-1446), Ital. architect; revived the classic style in Italy; most of his great work was executed in Florence, his birthplace, and includes the Pitti Palace, the great cupola of cathedral of Santa Maria del Fiore, the Capella del Pazzi: was one of first to bring laws of perspective into practical use.

**Brunetière**, FERDINAND (1849-1906), Fr. critic and historian of literature; editor of *Revue des Deux Mondes*; author of *Etudes Critiques* (1880-98), *Histoire et Littérature* (1884-87), *Questions de Critique* (1889-90), *Honoré de Balzac* (1906).

**Brunhild**. (1) In Norse myth. a Valkyrie, daughter of Odin, by whom she was thrown into a charmed sleep on Hindarfjell. (2) In the *Nibelungenlied*, Queen

of Iceland, who procured the murder of Siegfried, once her lover. (3) A Visigoth princess, wife of Sigbert, King of Austrasia (567).

**Brunialti**, ATTILIO (1849– ), Ital. politician, was prof. of constitutional law at Pavia and Turin; has been entrusted with political missions to Lisbon, Vienna, and London, and was, during the Great War, a member of Ital. war tribunal.

**Brünig Pass** (3,396 ft.), pass leading from Bernese Oberland to Unterwalden, Switzerland (46° 47' N., 8° 7' E.); branch ry. (1888).

**Brünn**, tn. and episc. see, Moravia, Czecho-Slovakia (49° 12' N., 16° 36' E.); cathedral (15th cent.); woollen factories; machinery, chemicals, brewing, dyeing, flour milling; many sieges; headquarters of Napoleon before Austerlitz. Pop. 125,000.

**Brunn**, CHRISTIAN WALTHER (1831– ), Dan. author and bibliographer; director National Library of Copenhagen; ed. *Holberg's Epistler* (1865–75); wrote *Gunde Rosenkrantz* (1885), etc.

**Brunnen**, vil., summer resort, Switzerland (46° 59' N., 8° 36' E.); deputies of Forest Cantons formed league here (1315).

**Brünnow**, FRANZ FRIEDRICH ERNST (1821–91), Ger. astronomer; b. Berlin; went to America (1854) as director, Observatory of Ann Arbor, Michigan; astronomer-royal for Ireland (1865).

**Bruno**, St. See CARTHUSIANS.

**Bruno THE GREAT** (925–965), Archbishop of Cologne and Duke of Lorraine; was chancellor to his brother, Otto the Great (940); reformed chancery, and purified monastic life; noted church builder; canonized 1628.

**Bruno**, GIORDANO (c. 1550–1600), Ital. philosopher; b. Nola, near Naples; Dominican friar in youth, but fled to Geneva (1576) on account of religious opinions; proceeded to Toulouse (1579) and to Paris (1580), where he lectured on philosophy and attacked Aristotelians; visited England (1583), where he met Sir Philip Sidney; in 1586, prof. at Wittenberg; returned to Italy (1592); imprisoned by Inquisition, and burnt as a heretic in Rome (1600). His philosophy tends towards pantheism, and influenced the thought of Descartes, Spinoza, Schelling, etc. Chief works, *Della Causa Principio ed Uno* (1584), and *Del Infinito Universo e Mondi* (1584).

**Brunsbüttel**, town and port, Schleswig-Holstein (53° 54' N., 9° 7' E.); w. terminus of the North Sea-Baltic canal. Pop. 2,500.

**Brunswick**, or BRAUNSCHWEIG.

(1) Republic of United States of Germany; Harz Mountains in s.; rivers, Ocker, Weser, navigable; beech, fir, pine, oak forests; coal, iron, agriculture, and cattle-rearing important; sugar and chemicals principal manufactures. In early times Brunswick was incorporated in Saxony; became independent duchy (1235); held by Guelphs till death of Duke William (1884), since when ruled by regent, as next heir, Duke of Cumberland, refused to forgo his claims to Hanoverian crown; Ernest Augustus succeeded (1913); deposed after Great War, and republic declared (Nov. 1919). Area, 1,424 sq. m.; pop. 494,300. (2) Cap. of above, Germany (52° 15' N., 10° 30' E.); Romanesque cathedral, begun c.

1173; fine Gothic town hall; ducal palace is modern; several museums; formerly great centre of Hanseatic League; industries include printing, jute spinning, manufacture of chemicals, machinery, sugar. Pop. 143,500.

**Brunswick.** (1) City, Georgia, U.S. (31° 10' N., 81° 28' W.); health resort; resin, turpentine, phosphates, cotton; terminus of steamboat lines to New York and Florida. Pop. 10,200. (2) Tn., Maine, U.S. (43° 54' N., 70° W.); paper, pulp, cotton mills. Pop. 6,600.

**Brunswick, New.** See NEW BRUNSWICK.

**Brunswick, FERDINAND, DUKE OF** (1721–92), Ger. general, served with distinction under Frederick the Great in War of Austrian Succession and Seven Years' War; commanded at Minden (1759); afterwards made field-marshal.

**Brunswick, FRIEDRICH WILHELM, DUKE OF** (1771–1815), was 'Brunswick's fated chieftain' of Byron's *Childe Harold's Pilgrimage*; deprived of his duchy by Napoleon, he organized the 'Black Brunswickers,' and was finally killed at Quatre Bras.

**Brunswick, HEINRICH JULIUS, DUKE OF** (1564–1613), patron of literature and the theatre; was himself a man of multifarious attainments—an able jurist, a clever architect, and a dramatist.

**Brunswick Black**, varnish composed of asphalt or pitch, linseed oil and turpentine; used to give a glossy appearance to metal, etc.

**Brunswick - Lüneburg, CHARLES WILLIAM FERDINAND, DUKE OF** (1735–1806), Prussian general; married daughter of George III. of Britain; succeeded

to duchy (1780); commanded Austrian and Ger. troops against French (1792); led Prussians against Napoleon; was mortally wounded at Auerstadt (1806).

**Brunton, SIR THOMAS LAUDER** (1844–1916), Scot. physician; b. Roxburgh; consultant, St. Bartholomew's Hospital, London; he examined and reported on Pasteur treatment for hydrophobia, and on the action of chloroform and snake poisons; King Edward VII. was one of his patients; baronetcy (1908); works include *Text-book of Pharmacology, Diseases of Assimilation*, etc.

**Brunton, WILLIAM** (1777–1851), Scot. inventor; joined Boulton and Watt at Birmingham (1796); effected improvements in metal manufacture; fitted out first man-of-war steam tug; invented calciner in use to-day.

**Brusa, or BROUSSA, tn., Asiatic Turkey** (40° 12' N., 29° 3' E.); silk, cotton, carpets; coal, silver, copper, meerschaum clay; iron and sulphur springs; seat of Gr. and Armenian archbishops; captured by Ottoman Turks (1329); burned by Mongols (1402); damaged by earthquake (1855). Pop. 112,000.

**Brussels, or BRUXELLES, cap. of Belgium, prov. of Brabant** (50° 52' N., 4° 21' E.); centre of canal and ry. system; industries, lace, furniture, bronzes, woollens, cottons, automobiles, leather goods, etc. Modern town is well laid out, has fine lime-planted boulevards separating it from suburbs, and avenues connecting it with parks and *bois*; older town in centre. Important buildings are town hall, magnificent *palais de justice*, royal palace,



houses of Parliament, three fine old churches, art and natural history museums, univ. ; centre of art and music. Various guilds were established in Brussels from 11th cent. ; first charter granted in 1312 ; saw struggles between rival guilds, and execution of Egmont and Horn ; thrice burnt ; cap. of Austrian Netherlands in 15th cent. ; taken by French in 1794, who held it till 1814 ; became cap. of Belgium in 1830. Pop. (Greater Brussels), 728,900.

During the Great War Brussels was entered by the Germans on Aug. 21, 1914. On the previous day the burgomaster, M. Max, one of the civilian heroes of the war, arranged for the free passage of the enemy's troops through the city, the Germans promising to pay in cash for all requisitions, to respect public and private property, and to uphold the civil administration. A processional entry was made by an army corps, under General Sixt von Armin, composed of all arms, which goose-stepped into the Grande Place. Presently it was announced that Germany had imposed upon the city a war indemnity of £8,000,000. The valiant M. Max fought hard to preserve Belgian rights, and became so troublesome that he was banished to Germany, being released from captivity after the armistice. The period of Ger. occupation, which lasted for four years, was one of hardship and distress for the inhabitants, whose spirit, however, was not broken. Publication of Belgian newspapers was forbidden, but several secretly printed sheets, notably *La Libre Bel-*

*gique*, continued to appear, and all the enemy's attempts failed to suppress them or to discover their authors. German zeppelin sheds near Brussels were frequently bombed by Allied aviators, who also dropped leaflets bringing news of the progress of the war. On Nov. 15, 1918, four days after the conclusion of the armistice, there was a mutiny among the Ger. soldiery in the city. Three days later Brussels was cleared of the Germans, and King Albert made a triumphant return to his capital.

*Brussels Conferences.*—The laws and usages of civilized warfare were defined by a conference held in 1874 at the suggestion of the Tsar of Russia, Alexander II. British upheld the view of the smaller states regarding the right of a population, even though not organized as a military force, to resist invasion. In 1876 Leopold, King of the Belgians, summoned an unofficial conference of the powers regarding the opening up of Africa, which resulted in the creation of the Congo Free State. In 1899–1900 a conference on suppression of the African slave trade was held.

*Brussels (Sugar) Convention.*—An international conference was held in 1898 regarding sugar bounties, and was renewed in 1901, the Indian Government having imposed countervailing duties on bounty-fed sugar. In 1903 a convention was ratified by the powers, except Russia, to suppress bounties, whether direct or indirect, on production or export. It was renewed in 1907 for five years in a modified form, with Russia's adherence.

In 1912 Great Britain, at the instigation of Free Traders, withdrew from the convention, which was prolonged till 1918. The outbreak of the Great War rendered the convention ineffective.

**Brussels Lace** originated in Brussels and its vicinity: famous since 17th cent. Needlepoint (*point d'aiguille*) most beautiful kind; *point d'Angleterre* made on pillows and bobbins.

**Brussels Sprouts**, vegetable (*Brassica oleracea*) of the cabbage family, in use in Belgium since 13th cent.

**Brussilov**, ALEXEI ALEXIVITCH (1853- ), Russian general; belonged to old Russian noble family; fought in Russo-Turkish War (1877-8); later director of cavalry school for officers at Petrograd, commander of 14th Army Corps (1900). In the Great War he commanded the Russian army which invaded Galicia and crossed Carpathians in spring of 1915; after the great retreat of 1915 his army group on the Russian left wing advanced victoriously (June 1916); after the Russian revolution he succeeded Alexeieff (June 1917) as generalissimo under provisional government, and conducted temporarily successful offensive: acknowledged commander-in-chief of the Soviet armies (May 1920).

**Brutus**, surname of members of Roman *gens* Junia. Distinguished representatives were LUCIUS JUNIUS, who helped to overthrow the Tarquin monarchy and became one of first consuls (509 B.C.), and MARCUS JUNIUS (85-42 B.C.), the great patriot of Shakespeare's *Julius Cæsar*, taken from Plutarch's *Lives*;

the latter was deeply loved by Cæsar, but joined in his assassination (44); after defeat by Augustus, he slew himself at Philippi; considered in Middle Ages a traitor, later a republican martyr.

**Brüx**, tn., Bohemia, Austria (50° 31' N., 13° 38' E.); Gothic church (16th cent.); sugar, iron; breweries, flour mills: lignite mines; salt springs; founded 11th cent.; scene of Hussite defeat (1421). Pop. 25,800.

**Bry**, THÉODORE DE (1528-98), Ger. publisher and engraver; carried on business at Frankfort-on-Main; visited London and met Richard Hakluyt, who assisted him in the preparation of an illustrated collection of voyages and travels which appeared in parts (1590-1634), the work being continued by his son, Johannes de Bry.

**Bryan**, GEORGE BARTLEY (1864- ), Eng. scientist, specialist in thermodynamics and aeroplane stability; prof. of maths., Univ. Coll., N. Wales; received gold medal, Institute of Naval Architects (1901), and that of Aeronautical Soc. (1915); author of *Thermodynamics* and *Stability in Aviation*.

**Bryan**, WILLIAM JENNINGS (1860- ), Amer. orator, journalist, and politician; sprang into note by speeches on bi-metallism; thrice nominated for presidency by Democratic party (1896, 1900, and 1908), and thrice defeated; organized volunteer regiment in Span.-Amer. War, but advocated an anti-imperial policy; founded newspaper *The Commoner* (1901); during tour of the world (1906) his speeches at National Peace Congress,

London, and at World's Missionary Conference, Edinburgh, made a deep impression; supported President Wilson's successful candidature (1912), and became secretary of state for foreign affairs; resigned (1915) owing to difference of opinion on *Lusitania* note; when America entered Great War, offered to serve as a private; ardent prohibitionist; pub. *Letters to a Chinese Official* (1906), *The Old World and its Ways* (1907), etc.

**Bryansk.** See BRIANSK.

**Bryant, WILLIAM CULLEN** (1794–1878), Amer. poet and journalist; b. at Massachusetts; adopted legal profession, which he abandoned in 1829 to become editor of the *New York Evening Post*, with which he was associated for the remainder of his life. He may be regarded as the pioneer of Amer. poets, his first considerable poem, *Thanatopsis*, appearing in 1817. He also trans. Homer's *Iliad* and *Odyssey*. *Poetical Works* (New York, 1903).

**Bryce, GEORGE** (1844– ), Canadian author and educator; principal Manitoba Coll. (1871–84); a founder of Manitoba Univ. and chairman of its Science Dep. (1891–1904); president Royal Soc. of Canada (1909), member of Conservation Commission on Canadian Resources (1909–13).

**Bryce, JAMES, 1st VISCOUNT** (1838– ), statesman and man of letters, born at Belfast; regius prof. of civil law at Oxford (1870); resigned to enter House of Commons (1880). Pub. in 1862 his famous book, *The Holy Roman Empire*, and immediately stepped into front rank as historical writer. Among other works are

his monumental *The American Commonwealth* (1888), *Impressions of S. Africa* (1897), *Studies in History and Jurisprudence* (1901), *Studies in Contemporary Biography* (1903), *The Hindrances to Good Citizenship* (1909), *S. America: Observations and Impressions* (1912). He became under-secretary for foreign affairs in Gladstone's short administration (1886); chancellor of the duchy (seat in cabinet), 1892; president of Board of Trade (1894); went out with government on defeat (June 21, 1895). Has been instrumental in placing many valuable measures on statute book; strenuous supporter of Home Rule; chief secretary for Ireland (1905–6), and in 1907 appointed Brit. ambassador to U.S., a post in which he won golden opinions and promoted cordial relations between the U.S. and the home country; returned in 1913. Holds honorary degrees from almost every univ.; in 1902 became one of the first fellows of the Brit. Academy; raised to peerage in 1914; awarded much-coveted Order of Merit. At eighty-two was full of vigour—'his eye not dim nor his natural force abated.'

**Brydges, SIR SAMUEL EGERTON** (1762–1837), Eng. genealogist and bibliographer; prosecuted an unsuccessful claim to the Chandos barony; pub. *Censura Literaria, British Bibliographer, Restituta, Autobiography*; cr. baronet (1814).

**Bryennios, PHILOTHEOS** (1833– ), Gr. theologian, b. at Constantinople; prof. of Church history, Chalkis; metropolitan successively of Seres and Nicomedia; discovered (1873), in monastery

of Holy Sepulchre, Constantinople, first complete ms. of two *Epistles of Clement*, also only known copy of *Teaching of the Twelve Apostles* (pub. 1883).

**Bryn Mawr**, seat of important women's college, Pennsylvania, U.S., 10 m. N.W. of Philadelphia.

**Brynmawr**, tn., Breconshire, Wales (51° 48' N., 3° 10' W.); extensive ironworks. Pop. 7,600.

**Bryology**, the science of mosses. See BRYOPHYTA.

**Bryony**, name commonly given to genus of eight or nine species of climbing herbs (*Bryonia*), native in Europe, Asia, and Africa, of the melon and cucumber family Cucurbitaceæ; some varieties are used medicinally.

**Bryophyta**, group of plants which includes two classes—the Liverworts or Hepaticæ, and the Mosses or Musci. As in the Pteridophyta, the sexual organs consist of archegonia and antheridia, and consequently the two groups are often united as the Archegoniata. The antheridia are generally stalked ovoid or globular structures producing a large number of biciliate sperms, whilst the archegonia do not differ essentially from those of the Pteridophyta. There is a distinct alternation of generations, the fertilized egg producing the sporophyte, which usually consists of an absorptive region, the foot, a stalk or seta, and a specialized capsule which produces the asexual spores. This is always to a large extent dependent on the gametophyte or moss 'plant,' the relative importance of the two generations thus being the reverse of that obtaining in the Pteridophyta.

The germinating spore in the liverworts usually produces a flat cell-plate from which the gametophyte originates directly, but in the mosses a branched filamentous growth, the protonema, at first arises, and from this the leafy shoots are developed. The mature gametophyte in the Hepaticæ may consist of a ribbon-like, repeatedly forked thallus, or, as in all the Musci, of a leaf-bearing shoot, attached to the substratum by a branching rhizoid system. They do not possess true roots, nor are their tissues differentiated into the specialized conducting elements of the higher forms. The leaves are also simple in type, except in a few such as *Polytrichum*. The sexual organs are borne on the upper surface of the thallus in the thalloid forms, or at the apex of the stem or branches in the leafy forms. The sporophyte produced from the fertilized egg varies considerably in structure, being on the whole much simpler in the Hepaticæ than in the Musci. In the majority of the former the capsule develops elongate cells termed elaters, which are primarily nutriment conductors, but which later develop spiral thickenings and assist in spore dispersal.

In the case of one group only, the Anthocerotales, is there a sterile central axis in the capsule, whilst in the Musci the presence of such an axis or columella is a general feature. The capsule in these also possesses a basal assimilatory portion in most forms, but is devoid of elaters. Asexual reproduction by specialized gemmæ also occurs in many liverworts and a few mosses.

**Bryozoa.** See POLYZOA.

**Bryum**, a large genus of mosses comprising about 700 species, mostly found on the ground and on rocks and walls, possessing beautiful pear-shaped capsules.

**Brzezany**, tn., Galicia (49° 28' N., 24° 57' E.), 30 m. w.s.w. of Tarnopol, on the Złota Lipa; market for agricultural region, and has distilleries and tanneries. In Great War was occupied by Russians in Sept. 1914, and evacuated by them towards the end of their great retreat (Aug. 1915). Brussilov's offensive (June to July 1917) reached the outskirts, but the Russians were flung back in disorder.

**B.S.**, Bachelor in Surgery.

**B.Sc.**, Bachelor of Science.

**B.S.L.**, Botanical Society of London.

**Bt.**, Bart., Baronet.

**B.Th.**, Bachelor of Theology.

**B.Th.U.** or **BRITISH THERMAL UNIT**, the unit quantity of heat employed by engineers, is the quantity of heat required to raise temp. of 1 lb. of water from 49° to 50° F.; mechanically equal to 778 ft.-lb. of work.

**B.T.U.** See under **BOARD OF TRADE UNIT**.

**Bubastis**, Gr. form of the name of the Egyptian goddess Ubasti, to whom the domestic cat was sacred. The festivals of this goddess were frequently marked by considerable riot.

**Bubble**, **SOUTH SEA**. See **SOUTH SEA BUBBLE**.

**Bubo**. See **OWL**.

**Bubonic Plague**. See **PLAGUE**.

**Bucaramanga**, tn., Colombia (7° N., 73° 19' W.); important coffee centre; tobacco, cocoa, cotton; gold, copper, iron;

manufactures Panama hats and cigars. Pop. 30,000.

**Buccaneers**, or **FILIBUSTERS**, name given to piratical adventurers, mostly French and British, who during the 17th cent. waged informal war on Spaniards and their possessions in W. Indies and adjacent mainland. The term was originally applied to Fr. hunters of San Domingo from their custom of preserving meat on a *boucan*, but later to freebooters of all nations, united in enmity to Spain, whose headquarters were at San Domingo and finally at Tortuga. Resentment at monopoly claimed by Spain procured for the buccaneers the connivance of England and France, and at the end of the thirty years (1655-85) during which buccaneering was at its height, Span. merchantmen were practically swept off the seas. To this period belong the names of Morgan, who sacked Panama, and of Davis, who sacked Leon and terrorized Spaniards in the Pacific. Political changes put an end to buccaneering when England and France became enemies and both sought alliance with Spain. The buccaneers played an important part in the commercial and colonial decline of Spain, and should not be confounded with the pirates who succeeded them (such as Teach), who preyed on all commerce irrespective of nationality.

**Buccinum**. See **WHEEL**.

**Buccleuch Family**. The Border house of Scotts of Buccleuch is traced back to Sir Richard le Scot in reign of Alexander III. of Scotland. The dukedom was created in 1663, and the present

holder of title is John Charles Montagu-Douglas-Scott, 7th Duke (1864—); succeeded his father (1914); was M.P. for Roxburghshire (1895–1906).

**Bucentaur** (debased from Ital. *bucintoro*), barge in which Doge of Venice, on Ascension Day yearly, wedded the Adriatic; custom begun about A.D. 1000; discontinued 1789.

**Bucephalus** (Gr. *boukephalos*, 'ox-head'), famous war-horse of Alexander the Great; many legends have sprung up about it; Alexander built city of Bucephalia (site of modern Telalpur) on the Hydaspes (Telum) to its memory (326 B.C.).

**Bucer**, MARTIN (1491–1551), Ger. reformer, a Dominican who was converted to Protestantism by Luther, and afterwards made Strasbourg a centre of Prot. learning. He refused to sign the Augsburg Interim (1548), and fled to England, where he became prof. at Cambridge.

**Buch**, CHRISTIAN LEOPOLD VON, BARON (1774–1853), Ger. geologist and geographer; travelled through Europe, making special study of volcanic rocks; was regarded by Humboldt as 'the greatest geologist of our century.' *Complete Works* pub. 1867–85.

**Buchan**, dist., now included in Banffshire and Aberdeenshire, Scotland (57° 34' N., 2° 10' W.); coast-line bold, rocky; gave title to one of oldest Scot. earldoms.

**Buchan**, ALEXANDER (1829–1907), Scot. meteorologist, one of the promoters of the Ben Nevis observatory (1883); wrote the *Handy Book of Meteorology*.

**Buchan**, JOHN (1875—), British novelist and historian;

author of *John Burnet of Barns*, *The Half-hearted*, *Prester John*, *Greenmantle*, and other novels; and of a biographical study, *The Marquis of Montrose*, and *Nelson's History of the War*, a work of superlative merit: has also written the official *History of the S. African Forces in France*, and pub. a volume of poetry, *Poems Scots and English*. His prose is distinguished for strength, lucidity, and unpretentious dignity. During the Great War he undertook special work at the Foreign Office, and, early in 1917, he was appointed director of information.

**Buchan**, WILLIAM (1729–1805), Scot. physician, is chiefly remembered as author of *Domestic Medicine* (1769), the first Eng. book of its kind (21st ed. 1813).

**Buchanan**, CLAUDIUS (1766–1815), Scot. divine; chaplain under the E. India Co.; wrote *Christian Researches in Asia*; trans. Gospels into Persian and Hindustani, etc.

**Buchanan**, GEORGE (1506–82), Scottish humanist and reformer; had to fly from Scotland (1539), through writing against monastic orders; became prof. of Latin at Bordeaux (where Montaigne was his pupil), and wrote Latin plays. Scaliger declared that 'in Latin poetry Buchanan leaves all Europe behind.' Imprisoned in Portugal by Inquisition (1551); tutor to Mary Queen of Scots (1562); tutor to James VI. (1570); wrote democratic political treatise, twice condemned by Parliament and publicly burned by Univ. of Oxford (1683); pub. history of Scotland, valuable as material for his own times (1582). He was a scholar and writer of first rank.

*Life*, by Hume Brown (1890), Wallace ('Famous Scots' series).

**Buchanan, JAMES** (1791-1868), 15th president, U.S.; educated Dickinson Coll., Carlisle, Pennsylvania (1809); barrister (1812); in lower house of state legislature (1814-16); Congress (1821-31); ambassador to Petrograd (1832-3); in senate (1833-45) as democrat; secretary of state (1845-9); minister to Great Britain (1853-6); president (1856-61); pub. a defence of his administration (1866).

**Buchanan, ROBERT WILLIAMS** (1841-1901), Eng. poet, novelist, and dramatist; his first vol. of verse, *Undertones* (1863), was followed by many others; *Complete Poetical Works* (1901). Of his numerous novels, *The Shadow of the Sword* and *God and the Man* are perhaps the best. He achieved his greatest success with his original plays and his adaptations of Fielding's novels.

Jay, *Robert Buchanan* (1903).

**Buchan Ness**, rocky peninsula, Aberdeenshire, Scotland (57° 28' N., 1° 46' W.); most easterly point of Scotland; lighthouse.

**Bucharest**. See BUKHAREST.

**Buchholz, tn.**, Saxony, Germany (50° 33' N., 12° 59' E.); Gothic church of the 16th cent.; school of lace making; book-binding. Pop. 9,700.

**Buchner, EDUARD** (1860- ), Ger. chemist, prof. of chem. successively at Tübingen, Agricultural Coll., Berlin, Breslau Univ., and Würzburg Univ.; famous for investigations on fermentation; Nobel prizeman (1907).

**Buchu**, a drug consisting of dried leaves of species of *Barosma* genus of rutaceous plants, com-

prising sixteen species, mostly confined to s.w. region of Cape of Good Hope; used in stomach trouble and for inflammatory disorders of urinary system.

**Buck**. See DEER FAMILY.

**Buck, DUDLEY** (1839-1909), Amer. composer; held appointments as organist at Chicago, Boston, and New York; operas include *Serapis* and *Deseret*; cantatas, *Columbus*, *Golden Legend*, *Light of Asia*, etc.

**Buck, LEFFERT LEFFERTS** (1837-1909), Amer. engineer, captain in Civil War; built suspension bridge at Niagara Falls.

**Buck-bean**. See BOG BEAN.

**BucketShops**, offices of brokers who, not being Stock Exchange members, are not allowed to carry out sale or purchase of stocks or shares, and must employ Stock Exchange brokers.

**Buckie**, par. and fishing tn., Banffshire, Scotland (57° 41' N., 2° 58' W.); sawmills, distillery; rope and sail yards. Pop. 8,900.

**Buckingham, munic. bor., par.**, Buckinghamshire, England (52° N., 0° 59' W.); agricultural centre; condensed-milk factory, corn-mills. Pop. 3,300.

**Buckingham, EARLDOM, MARQUESSATE, AND DUKEDOM OF**. Earldom of Buckingham goes back to 11th cent. **GEORGE NUGENT TEMPLE GRENVILLE** (1753-1813), 2nd Earl Temple, was cr. Marquess of Buckingham (Dec. 1784). His eldest son, **RICHARD GRENVILLE** (1776-1839), was cr. Duke of Buckingham and Chandos (1822). The dukedom became extinct in 1889.

**Buckingham, GEORGE VILLIERS, 1ST DUKE OF** (1592-1628), Eng. statesman; introduced to

king (Aug. 1614); soon gained favour as successor to Earl of Somerset; was knighted (April 1615); promoted Viscount Villiers and Baron Waddon (1616), Earl of Buckingham (1617), and Marquess of Buckingham (1618); lord high admiral (1619); supported Span. party (1620-22), but after disastrous visit to Madrid (1623) headed popular movement against Spain, and strove for a Fr. alliance. His schemes were interrupted by James's death (1625). Buckingham and Charles were resolved to fight Spain, but their attempts failed disgracefully; Parliament (1625-8) demanded Buckingham's dismissal, but Charles stood by his minister, who was assassinated by a discontented subaltern (Aug. 23, 1628) at Portsmouth, while preparing an expedition to relieve La Rochelle. Buckingham's character has been well portrayed by Scott in *The Fortunes of Nigel*.

**Buckingham, GEORGE VILLIERS, 2ND DUKE OF** (1628-87); fought for the king in Civil War; appointed general of Eastern Association in England (1650); present with Charles at battle of Worcester (1651); imprisoned on suspicion of organizing a Presbyterian plot against government (1657-9). Restored to favour at Restoration, he subsequently succeeded Clarendon as chief minister; his tenure of office chiefly marked by scandals and intrigues; forced to retire into private life (1674); joined opposition; but separated from Whigs on Exclusion question; restored to king's favour (1684), but took no part in public life after James's accession; volatile, in-

sincere man, the 'Zimri' of Dryden's *Absalom and Achitophel*. Wrote occasional verses and satires, also witty comedies, including *The Rehearsal* (1671), in which he parodied Dryden's manner—Dryden, the poet laureate, appearing as 'Bayes.'

**Buckingham, HENRY STAFFORD, 2ND DUKE OF** (in the Stafford line) (1454-83); recognized as duke (1465); transferred his support from Richard of Gloucester to Henry Tudor; hence tried and executed (Nov. 2, 1483).

**Buckingham, JAMES SILK** (1786-1855), Eng. author and journalist; went to India and founded the *Calcutta Journal* (1818), which was suppressed for criticism of the East India Co.; returned to England and started the *Athenæum* (1828); M.P. for Sheffield (1832-7); travelled extensively and wrote numerous books of travel.

**Buckingham and Chandos, RICHARD PLANTAGENET TEMPLE NUGENT BRYDGES CHANDOS GRENVILLE, 2ND DUKE OF** (1797-1861), author of the Chandos clause in the Reform Bill (1832), by which the county franchise was fixed at £50—passed when he was Lord Chandos, M.P. for Buckinghamshire.

**Buckingham Palace**, modern royal residence, London, to w. of St. James's Park; built (1825) in Georgian style, on site of Buckingham House, the Duke of Buckingham's residence in Queen Anne's reign; 40 ac. of gardens.

**Buckinghamshire**, co., Eng. land (51° 26'-52° 11' N., 0° 35'-1° 8' W.); area, 748 sq. m.; bounded N. by Northampton, E. by Bedford, Hertford, Middlesex, S. by



Berkshire, w. by Oxford; surface generally undulating; in s. are Chiltern Hills, which are well wooded, especially with beeches; in centre is Vale of Aylesbury, a dist. noted for dairy produce, ducks, and sheep; drained by Thames, which bounds co. on s., and by Ouse, Colne, Thame; there are no large towns; cap. **AYLESBURY**; manufactures unimportant, include straw-plait, wooden chairs, thread lace, paper. Famous school, **ETON**, is near southern boundary. Buckinghamshire is traversed by Watling Street and other anc. highways; was included in old kingdom of Mercia; saw struggles against Danes; scene of hostilities in civil war of John's reign; supported Roundheads during great rebellion. Pop. 219,500.

**Buckland, FRANCIS TREVEL-YAN** (1826-80), Eng. naturalist; authority on fish culture; works include *Curiosities of Natural History*, *Natural History of Brit. Fishes*; founded *Land and Water* (1866). *Life*, by Bompas (1885).

**Buckland, WILLIAM** (1784-1856), geologist; Dean of Westminster (1845); gave immense stimulus by his lectures and books to the study of palæontology; wrote *Reliquiæ Diluvianæ*.

**Buckle, GEORGE EARLE** (1854-), author; ed. of the *Times* (1884-1912); undertook completion of Monypenny's *Life of Disraeli*, vol. iii. appearing in 1914, vol. iv. in 1916, vols v., vi., in 1920.

**Buckle, HENRY THOMAS** (1821-62), Eng. historian and sociologist; b. Lee, Kent; travelled on Continent and in Egypt and Syria; a famous chess-player; pub. two vols. of his great work,

*History of Civilization* (1857-61). His death at Damascus stopped its completion.

**Buckley, ARABELLA BURTON** (MRS. FISHER) (1840-), Eng. naturalist; was secretary to Sir Charles Lyell (1864-75); lecturer on natural science (1876-83); has expounded the charms of science for the young in several works—e.g., *The Fairyland of Science*; *Eyes and No Eyes* (1901).

**Buckmaster, STANLEY OWEN**, 1ST BARON OF CHEDDINGTON (1861-), Eng. lawyer and politician; Liberal M.P. (1906-13); held the offices of solicitor-general (1913), director of Press Bureau (1914-15), lord chancellor (1915-16); was member of Interallied Conference on Finance and Supplies.

**Buckner, SIMON BOLIVAR** (1823-1914), American soldier; fought in Mexican War; joined Confederate army in Civil War and surrendered to Grant at Fort Donelson; governor of Kentucky (1887-91).

**Bucks Battalions.** See OXFORD AND BUCKS L.I.

**Bucks Hussars.** See under YEOMANRY.

**Buckstone, JOHN BALDWIN** (1802-79), Eng. actor and dramatist; was an admirable low comedian, and a prolific writer of farces, but is chiefly remembered as manager of the London Haymarket theatre.

**Buckthorn**, a genus of *Rhamnus*, mostly shrubs; has small greenish flowers in clusters; native chiefly of N. temperate regions; two species native to Britain—*R. catharticus* (with flower parts in fours) and *R. frangula*, which has no spines.

**Buckwheat** (*Fagopyrum esculentum*), herbaceous plant of order Polygonaceæ; native of Caspian shores and Central Asia; cultivated in Europe and U.S.; name a corruption of beechwheat, its fruit resembling beech seed; as *Polygonum* often grown as garden plant for sake of pink blossom; used for making cakes and crumpets, especially in America.

**Bucolics**, name given to the pastoral poetry of the anc. Gr. and Lat. poets, and so applied in modern times to similar work.

**Buczacz**, tn., Galicia (49° 4' N., 25° 23' E.), 35 m. s.s.w. of Tarnopol, on the Strypa; here was signed (1672) humiliating Turko-Polish treaty, soon broken by John Sobieski; during Great War was occupied by Russians (Sept. 1914), and evacuated in retreat of 1915, but retaken in offensive of Aug. 1916 and held till final Russian *débâcle*.

**Budapest**, cap., republic of Hungary (47° 30' N., 19° 4' E.); consists of two towns, Buda and Pest, on opposite banks of Danube, which were united in 1873. Buda (or *Ofen*) is principal seat of government; royal palace and houses of parliament situated here; Pest is commercial centre, but contains houses of parliament (completed 1903), univ., museum, and art collections; there are many fine churches, notably the St. Matthias church in Buda, and the Leopoldstadt basilica in Pest. Budapest contains many mineral springs, some of which were known in Roman times, and some splendid baths.

Buda originated in Roman military colony of *Aquincum*; Romans withdrew in late 4th

cent. A.D., after which place was successively occupied by Huns, Goths, and other barbarian peoples; taken by Magyars in 10th cent.; ruined by Mongols in 1241; restored by Bela iv.; fell to Turks (1526); became Hungarian cap. (1867); occupied by Rumania for short time in Aug. 1919.

Industries include flour milling, tanning, sugar refining, distilling, manufacture of cutlery, gold and silver goods, tobacco, etc.; trade carried on in corn, wine, spirits, cattle, and famous Hungarian flour. Inhabitants are Germans, Magyars, together with other nationalities. Pop. 880,000.

**Budaun.** (1) Dist. United Provinces, India; rice, sugarcane, poppy; sugar refining, cotton weaving, brasswork, and pottery. Area, 1,987 sq. m.; pop. 1,053,300. (2) Chief tn. of above dist. (28° 2' N., 79° 11' E.); founded A.D. 905; centre of disaffection during Mutiny (1857). Pop. 38,200.

**Budde**, KARL (1850- ), Ger. theologian; prof. successively at Bonn, Strasbourg, and Marburg; has contributed to Hastings's *Bible Dictionary*, and written many commentaries, etc.

**Buddha**, founder of BUDDHISM, was really Gautama, the son of Suddhodana, chief of the Sakiya clan, and was born probably about 568 B.C. Married at nineteen, he led a life of ease; when twenty-nine fled from home, and became a wandering beggar. After temptation by Mara, he spent six years of most terrible austerities till, worn out, he ceased to inflict penances on himself, thereby forfeiting some of his followers' admiration. Still

he could not satisfy himself, but at last he obtained peace of mind meditating beneath a bo tree.

Determined to preach and bring to others the peace he had found himself, Buddha began by winning back his former disciples. He continued his preaching and teaching for forty-five years. At length, on a journey to Kusimara, N.E. of Benares, he lay down to die beneath two sala trees. He was a great and gracious character. An urn containing ashes, probably those of Buddha himself, was discovered recently.

Oldenburg, *Buddha* (Eng. trans., 4th ed., 1904); Rockhill, *Life of Buddha*.

**Buddh Gaya**, or BODH GAYA, vil., Bengal, India (24° 42' N., 85° 2' E.); has temple dating from c. 550 B.C., closely associated with events in the life of Buddha, and probably the most anc. sculptured monument in India. Pop. c. 500.

**Buddhism**, the religious system founded by the Buddha; widely spread in Asia, though it has never gone beyond. Its main principle is the Middle Path, between self-indulgence and asceticism. The 'Middle Path' is also the Eightfold Path—that is (in the trans. of a modern scholar) Right Views, Right Aspirations, Right Speech, Right Conduct, Right Mode of Livelihood, Right Effort, Right Mindfulness, and Right Rapture. Besides this there are Four Truths—that unsatisfied desire is painful, that desire is the origin of suffering, that the removal of pain is the emancipation of desire, and that the way thereto is the Eightfold Path. Buddhism involves belief neither in God, immortality, nor sacri-

fice. Great emphasis is laid on love. Besides the things to be desired there are Ten Bonds, Five Hindrances, and Four Intoxications, which are to be avoided. When a man has conquered himself and guided his life aright in all these, he can attain the *Arahatship*, or perfection. The three great sins are self-indulgence, ill-will, and stupidity, and the emancipation from these constitutes *Nirvana*.

Buddhism lays enormous emphasis on emancipation in this life, not in the future; rejects the immortality of the soul, but keeps the doctrine of the transmigration. Though no soul really exists, yet the desires possessed in one creature pass on to another in the next life. This doctrine is called *Karma*, and was in part adopted from Hindu religion.

The Buddha's teaching was oral, and was delivered in *sutras* (formulae). These were gathered together by his disciples, and are all in Pali, the everyday speech of his time (Sanskrit already being a dead language). Many works relating to Buddhism were written at various times within six centuries after the Buddha's death.

Buddhism spread in India, but there was a reaction towards Hinduism, and now Buddhism is almost extinct except in Nepal. Ceylon is Buddhist. It is also the religion of Further India, and Lamaism, the religion of Tibet, is a corrupt form. Buddhism, one of the religions that have exerted most influence on the world, now numbers more adherents than any other faith except Christianity, but it does not seem likely to influence Europe much.

Rhys Davids, *Buddhist India* (Story of the Nations), *History of Buddhist India* (Hibbert Lectures), *Buddhism* (S.P.C.K.); Mrs. Rhys Davids, *Buddhism*.

**Buddon Ness**, sandy promontory, Forfarshire, Scotland (56° 28' N., 2° 45' W.), with two lighthouses; Buddon military camp is in vicinity.

**Bude**, or BUDE HAVEN, eccles. dist. and small seapt., Cornwall, England (50° 50' N., 4° 32' W.); rising seaside resort. Pop. (including Stratton) 3,000.

**Budge**, SIR ERNEST A. WALIS (1857- ), Egyptologist, keeper of Egyptian and Assyrian Antiquities, Brit. Museum; continued the excavations at Nineveh begun by Layard, and excavated Der in Mesopotamia (1891). Among his many works are *Assyrian Texts*, *The Rosetta Stone*, and *Egyptian Sculptures*.

**Budget** (O.Fr. *bougette*), the financial statement annually made in House of Commons by chancellor of exchequer. The figures in this statement are given under two heads—first, those relating to the actual expenditure and income of the country for the financial year; and, second, an estimate of the probable expenditure and income for the subsequent twelve months, with proposals as to how any extra expenditure or probable deficit has to be met, either by additional taxation, by loan, or by suspension of the sinking fund, or proposals as to how any surplus is to be utilized, by the reduction of taxation or extinction of debt.

**Budrio**, tn., prov. Emilia, Italy (44° 32' N., 11° 33' E.), 12 m. N.E. of Bologna. Pop. 17,000.

**Buds and Budding**. A bud is a young plant shoot having all its parts, stem and leaves, packed into the smallest possible space. The bud may consist of stem and foliage leaves only, with or without protective covering; such is a vegetative bud, like the 'eye' of the potato or the familiar buds of trees. Or it may consist of floral leaves only, such as a flower bud—e.g., rose bud. In many cases it contains both vegetative and floral parts, as in the bulb of the daffodil or the crocus corm. The primary reason for existence of buds is to enable a plant or plant shoot to persist through unfavourable periods, such as winter.

*Budding* refers to the operation of transferring a bud from a tree whose qualities it is desired to propagate to the 'stock' (stem or branch) of a similar or nearly allied species possessing special vigour of growth or other advantages; care and as great rapidity as possible are required in the various methods used. See also under GRAFTING.

**Budweis**, tn. and episc. see, Bohemia, Czecho-Slovakia (48° 58' N., 14° 28' E.); famous cathedral; lead pencils, porcelain, chemicals. Pop. 45,100.

**Buell**, DON CARLOS (1818-98), Amer. Federalist general; defeated Bragg in race for Louisville, but was superseded (1862) for not pushing the pursuit after indecisive battle of Perryville.

**Buelow**, von. See BÜLOW.

**Buenos Aires**. (1) Prov., Argentina, S. America; surface is plain, crossed by many streams and dotted with lakes; chief industry, sheep and cattle rais-

ing; produces cereals, tobacco, fruits; exports butter, wool, wheat, jerked beef; cap. La Plata. Area, 117,800 sq. m.; pop. (not including town of Buenos Aires) 1,800,000. (2) Cap. of Argentine Republic ( $34^{\circ} 40'$  S.,  $58^{\circ} 25'$  W.), and largest city in southern hemisphere, on r. bk. of La Plata R.; extensive docks; terminus of many railways; great manufacturing town and centre of inland trade; manufactures cloth, carpets, furniture, cigars, boots, shoes; city regularly laid out, with fine squares and parks; large cathedral and archiepiscopal palace; other important buildings are government house, exchange, state library, univ., opera house. City was finally established by de Garay in 1580, after two unsuccessful attempts at settlement by earlier Span. colonists. Docks have been greatly enlarged of recent years and channel to mouth of river deepened. Pop. (est.) 1,500,000.

**Buer**, tn., Westphalia, Prussia ( $41^{\circ} 35'$  N.,  $7^{\circ} 4'$  E.); coal mining. Pop. 61,500.

**Buffalo** (*Bubalus*), genus of ruminants belonging to the same family (Bovidae) as the ox; includes two principal species. The Ind. buffalo (*B. buffelus*) is indispensable as a powerful beast of burden and for traction and domestic purposes. They have a preference for marshy ground, which they frequent. Domesticated herds have been introduced into Italy and Greece. The Cape buffalo (*B. caffer*) occurs in large herds in Central and S. Africa, and is very powerful and dangerous when wounded;

it cannot be domesticated. The base of the horns forms a thickening practically bullet-proof.

**Buffalo**, city and port, New York, U.S. ( $42^{\circ} 52'$  N.,  $78^{\circ} 53'$  W.); at E. end of Lake Erie; terminus of Erie Canal, and a great trading and railway centre; ranks next to Pittsburg in manufactures of iron and steel. Grain, flour, live stock, coal, and lumber are chief articles of commerce. Industries include meat packing, oil refining, brewing, distilling, car and ship building, manufacture of leather, tobacco, clothing, etc.; has fine harbour. A handsome town, it is regularly laid out with broad tree lined streets and stately public buildings, including granite city hall, state arsenal, Albright Art Gallery, etc. There are many charitable institutions and several beautiful parks. Buffalo was founded in 1801 by Holland Land Co.; incorporated as city (1832); Pan-American Exposition (1901). Pop. (est.) 475,800.

**Buffon**, GEORGE LOUIS LEClerc, COMTE DE (1707–88), Fr. naturalist; b. Montbard (Burgundy); early abandoned law for natural sciences; appointed member of Academy and superintendent of Jardin du Roi (now Jardin des Plantes) (1739); enjoyed favour of Louis xv. and xvi.; produced, with assistance of Daubenton, his great work, *Histoire Naturelle* (1749 et seq.).

**Buffis**, old 3rd regiment of foot, formed 1572; now the East Kent Regiment. See under KENT REGIMENT, EAST.

**Bug**, general name for any member of the insect order Hemiptera; particularly the bed-bug

(*Cimex lectularius*), a flat, wingless semi-parasite found only in human dwellings, although related species occur on bats and birds.

**Bug.** (1) Western or Polish Bug (49° 55'–52° 13' N., 20° 40'–25° E.), trib. of the Vistula, rises in E. Galicia, turns w. from Brest-Litovsk and enters Vistula at fortress of Novo Georgievsk, 23 m. n.w. of Warsaw; 450 m.; navigable from Brest downwards. In the early months of the Great War the Russians fought their way across the Upper Bug to Lemberg (Sept. 1914), and were driven from it and also from its lower stretch before Warsaw in the great retreat of 1915. (2) Southern or Black Sea Bug (anc. *Hypanis*) rises in Volhynia and flows (46° 38'–49° 34' N., 26° 30'–32' E.) s.e. through the governments of Podolia and Kherson to Nikolaiev, where it forms an estuary joining the Dnieper; 450 m.; navigable from Nikolaiev to the sea (50 m.); figured in the struggle between Denikin and the Bolsheviks (1919).

**Buga**, town, Colombia, S. America (3° 58' N., 76° 28' W.); sugar, coffee, cacao. Pop. 13,000.

**Bugason**, tn., Panay I., Philippines (11° 4' N., 122° 3' E.); dates from 1700. Pop. 14,000.

**Bugeaud de la Piconnerie**, THOMAS ROBERT, DUC D'ISLY (1784–1849), Fr. soldier; served in Napoleonic campaigns; became a field-marshal (1831); won distinction in Algeria, being governor. (1840–6); made marshal of France (1843); commanded the army of the Alps (1848–9).

**Bugge**, SOPHUS (1833–1907), Norweg. philologist; prof. of philology at Christiania; ed. the

*Elder Edda*, *Gamle Norske Folkeviser* (folk-songs), etc.

**Bugis**, a Malayan people of Mohammedan faith, inhabiting Celebes and other portions of the Malay Archipelago; governed by a native king; are brave and fierce in disposition, practise agriculture, and trade in a variety of native products.

**Bugle**, treble brass, copper, or silver wind instrument, with less expanded bell than trumpet; only five of its eight notes used for bugle calls—viz., C, below the stave, and G, C, E, G, in ascending order.

**Bugle**. (1) *Ajuga reptans* or common bugle; genus of *Rabiatæ*; upper leaves and bracts dull purple. (2) - longish black bead used in dress ornamentation.

**Buguruslan**, tn., Samara, Russia (53° 41' N., 53° 28' E.); agricultural produce and tanning industrv. Pop. 12,000.

**Buhl Work** (correctly 'Boulle Work'), a species of marqueterie decoration for furniture, invented and brought to a high state of perfection by famous Fr. cabinet-maker, ANDRÉ CHARLES BOULLE, who improved on the gilding, painting, and inlaying of the Renaissance artists by the introduction of inlays of brass, enamelled metal, rosewood, and tortoise-shell.

**Building**, the name given to the art of erecting houses, public edifices, shops, etc., which, besides the architect who designs the structure, is the work of various craftsmen such as the mason, bricklayer, carpenter, joiner, plumber, painter, and glazier. Though the architect delegates the manual work to a

builder, it is requisite that he should have a thorough knowledge of building construction, drainage, and other matters; that he should understand the kind of foundation required from an examination of the soil; be fully acquainted with the by-laws governing the erection of buildings, with regard to height, spacing, materials used, and numerous other necessary details; and, in short, be fully competent to supervise the work of the builder. In choosing a site for the erection of a building, 'made' ground—i.e., land which has at some time been artificially filled in—should be especially avoided, likewise marshy ground, a dry subsoil, with natural drainage, being the most suitable for building purposes. Even when a site with a dry soil has been chosen, the builder frequently lays a foundation of concrete, which is not only calculated to give greater stability to the superstructure, but also serves to protect the building from the effects of damp.

**Building Society**, a society established by a number of persons to raise by their subscriptions a fund for making advances to members upon mortgage. Such societies are either terminating or permanent. The former terminate at a date fixed by the rules, or when a result aimed at has been attained. The latter are not limited in duration. In Britain these societies are incorporated by registration by the registrar of friendly societies, with whom their rules, which correspond to the articles of association of a company, must be

lodged. The liability of members is limited. A society may borrow to the extent of two-thirds of the amount advanced on mortgage, and if this limit is exceeded the committee of management are personally liable. The registrar has extensive powers of control. The annual accounts must be sent to him; he may, under certain circumstances, order an inspection of the books, or convene a special meeting; he has power to cancel the certificate of incorporation if it has been obtained by fraud, or for other specified causes. A dissolution may take place (1) in accordance with the rules; (2) by resolution of three-fourths in number and two-thirds in value of the members; (3) by a winding-up by the court; or (4) by order of the registrar, if satisfied, on petition of one-tenth of the members, that the society cannot meet its liabilities. The Building Societies Act of 1894 provides that, in societies established subsequent to that date, applicants for advances from the funds must not ballot for precedence; and power is given to older societies to make an alteration in their constitution in this respect if necessary. Building Societies Acts are dated 1874, 1875, 1884, and 1894. A few earlier societies still survive which have not been incorporated under these Acts. See HOUSING.

Davis, *On Building Societies* (1887); Rigley, *How to Manage Building Associations* (1873).

**Building Stone**. The qualities of a first-class building stone are so many that it rarely combines all and is, at the same time, accessible, abundant, and cheap.

It must resist a great, crushing stress, as well as atmospheric action and weathering. It should be of uniform and pleasing colour; not liable to discoloration on exposure; obtainable in large blocks and in large quantity; not too expensive to saw and dress; accessible and easily quarried.

Granites are durable, pleasing in colour usually, but difficult to dress, not very accessible, and therefore expensive. Sandstone is, perhaps, most widely used, but it varies greatly in quality. A good example is the Craigleith stone, formerly extensively used in Edinburgh and neighbourhood. Limestones are widely used in s. of England. Marbles are expensive, and do not withstand the smoke of towns. Magnesian limestones are largely used in Britain. The Bath Oolite (a limestone) has the useful quality of hardening with exposure to air, though soft and easy to work as it comes from the quarries. Stonessuch as serpentine, dolerite, diorite, and basalt are little used. Their dark colour and difficulty in dressing are against their use.

E. Hull, *Building and Ornamental Stones* (1872); J. Gwilt, *Encyclopaedia of Architecture* (1900).

**Builth**, mrkt. tn., Breconshire, Wales ( $52^{\circ} 9' \text{ N.}, 3^{\circ} 24' \text{ W.}$ ); chalybeate and sulphur springs; destroyed by Llewellyn (1260); rebuilt (1277). Pop. 1,700.

**Buisson**, FERDINAND EDOUARD (1841– ), Fr. educationist and politician; director of primary education (1879); a strong supporter of the Combes cabinet; a deputy (1902 and 1906).

**Buitenzorg**, tn., health resort, Batavia, Java ( $6^{\circ} 28' \text{ S.}, 106^{\circ}$

$48' \text{ E.}$ ); famous botanical gardens and institute. Pop. 25,000.

**Bujalance**, tn., Cordova, Spain ( $37^{\circ} 53' \text{ N.}, 4^{\circ} 24' \text{ W.}$ ), 24 m. E. of Cordova; centre of agricultural trade; tanneries, woollen goods, glass, earthenware; remains of Moorish castle. Pop. 11,000.

**Bukharest**, or BUCHAREST, cap. of Rumania ( $44^{\circ} 25' \text{ N.}, 26^{\circ} 7' \text{ E.}$ ); situated in Wallachian plain, and traversed by Dimbovitza R.; has royal palace, government buildings, state univ., museum, many Greek churches, and charitable institutions; trading centre, principally in agricultural produce, timber, and petroleum. Treaty settling boundary question was concluded here by Turkey and Russia (1812); likewise that ending Balkan Wars in 1913. During the Great War Bukharest was in hands of Germans (Dec. 1916 to Nov. 1918). Treaty signed here between Rumania and Central Powers (March 7, 1917) was nullified by armistice of November 11, 1918. Pop. 300,000.

**Buknfjord**, large island-studded fiord, Norway ( $59^{\circ} \text{ N.}, 6^{\circ} \text{ E.}$ ); lower parts of steep shores are wooded, higher snow-covered.

**Bukovina**, former duchy and crown-land, Austria, now part of Rumania ( $48^{\circ} \text{ N.}, 25^{\circ} 30' \text{ E.}$ ); great part occupied by Carpathian Mts.; fertile, extensive forests; chief trade, cattle, grain, wool, agricultural produce; cap. Czernovitz. Mixed population, leading nationalities Ruthenian, Rumanian; ceded to Austria (1777); incorporated with Galicia (1786), but made separate crown-land (1849); ceded to Rumania after Great War (1914–



18). During the war the Russians overran the Bukovina in Jan. 1915, but were subsequently compelled to evacuate it, owing to the general retreat of their armies in that year. It was recovered in June 1916. When Rumania entered the war the Russians established contact with the Rumanian troops in the southern Bukovina, where, on Jan. 25, 1917, they defeated a Ger. attempt to break through. Area, 4,033 sq. m.; pop. 820,000.

**Bulacan.** (1) Prov., Luzon, Philippines; flat; several rivers; rice, sugar, indigo, coffee; coal, copper, lead, silver. Area, 841 sq. m.; pop. 223,700. (2) Tn. of above ( $14^{\circ} 48' \text{ N.}$ ,  $120^{\circ} 56' \text{ E.}$ ); river traffic. Pop. 11,600.

**Bulair, ISTHMUS OF,** neck of land 5 m. wide between Gulf of Saros (Ægean Sea) and Sea of Marmora ( $48^{\circ} 28' - 40^{\circ} 35' \text{ N.}$ ,  $26^{\circ} 35' - 26^{\circ} 46' \text{ E.}$ ), connecting Gallipoli peninsula with mainland of Thrace. In the Crimean War the fortified 'lines of Bulair' were held by Brit. and Fr. troops. During the Great War a feint was made against Bulair at the time of the Gallipoli landing (April 25, 1915). It has been urged that the main landing ought to have been made at Bulair, but Sir Ian Hamilton in his dispatch (May 20, 1915) gives convincing reasons why this course was not adopted. See GALLI POLI.

**Bulan, tn., Luzon, Philippines** ( $12^{\circ} 40' \text{ N.}$ ,  $123^{\circ} 57' \text{ E.}$ ); port of call for coastwise steamers. Pop. 13,400.

**Bulandshahr.** (1) Dist., United Provinces, India; fertile plain; canal irrigation; wheat, maize, barley; cotton and sugar-cane.

Area, 1,899 sq. m.; pop. 1,123,800. (2) Cap. of above ( $28^{\circ} 15' \text{ N.}$ ,  $77^{\circ} 52' \text{ E.}$ ); great antiquity; artistic wood carving. Pop. 19,400.

**Bulawayo, or BULUWAYO,** largest town and most important commercial centre, Rhodesia, S. Africa ( $20^{\circ} 4' \text{ S.}$ ,  $28^{\circ} 42' \text{ E.}$ ); gold mining; observatory, meteorological station. Pop. 5,200.

**Bulbs.** A true bulb consists almost entirely of a series of overlapping fleshy scales—modified leaves attached to a rudimentary stem. It also contains a bud which develops at the expense of the stored food material in the fleshy scales. The plant thus formed in turn produces a bulb by storing up food material during period of growth. Examples of true bulbs are: tulip, daffodil, and onion. The term, loosely applied, includes the corm of the crocus, the tuber of the dahlia, as well as the rhizome of the anemone.

**Bulbul,** name given on account of their call to several common Indian garden birds of family Pyrenonotidæ; and also to the Persian nightingale, *Daulias*.

**Buldana, dist., Berar, India** ( $20^{\circ} 26' \text{ N.}$ ,  $76^{\circ} 26' \text{ E.}$ ); partly forested; wheat, jowar, cotton in fertile valleys; is subject to famine; chief tn. Buldana. Area, 3,731 sq. m.; pop. 669,200.

**Bulfin, SIR EDWARD STANISLAUS** (1862– ), Brit. soldier; entered army in 1884, and served in Burma (1892–3) and S. Africa (1898–1902). At outbreak of Great War he went to France in command of 28th (later 60th) Division, was wounded at the first battle of Ypres (Nov. 2,

1914), and later promoted major-general. In 1918 he served under Allenby in Palestine in command of the 21st Corps, which took a prominent part in the great drive northwards which finally defeated the Turks. See PALESTINE (*Campaigns in*)

**Bulgakov, GENERAL**, Russian soldier, was in command of Russian 20th Army Corps, which met with disaster during Russian retreat from E. Prussia (Feb. 1915), as result of Hindenburg's enveloping movement.

**Bulgaria**, kingdom, Balkan Peninsula, S.E. Europe (41° 15'–44° N., 22° 10'–28° E.); bounded N. by Danube, E. by Black Sea, S. by Macedonia and Thrace, W. by Serbia; includes E. Rumelia. Bulgaria is drained by Maritza and affluents of Danube; crossed by Balkans and Rhodope Mts. In N. between Tirnova and Rustchuk are grass-covered plains, dotted with thousands of tumuli or burial mounds, which are also found on plains near Philippopolis. Country is almost entirely agricultural, about five-sevenths of population engaged on land. Wheat, the principal product, is largely exported; wine, tobacco, silk also produced. Minerals include coal, iron, gold, silver, lead, manganese, copper. Chief manufactures are attar of roses (at Kezanlik), woollens, cottons, cigarettes; there are breweries, distilleries, filigree works, sugar-refining works; fisheries in Danube and Black Sea; imports, textiles, metal goods, machinery, petroleum, leather, etc.; exports, cereals, live stock, attar of roses, rice, silk, wine, tobacco, eggs, skins; railway mileage, 1,845.

II.

Inhabitants are mainly Bulgarians proper, with considerable number of Turks; principal religion, Gr. Church. Education is compulsory. Most important towns are Sofia (cap.), Tirnova (old cap.), Philippopolis (cap. of E. Rumelia), Varna and Rustchuk (ports), Slivno (manufacturing city). Area, c. 42,000 sq. m.; pop. 5,500,000.

*History*.—Early history is obscure; peopled by Thraco-Illyrian tribes, who were subdued by Philip and Alexander of Macedon; annexed by Vespasian, and became Roman prov. in 1st cent. A.D. About A.D. 328 the country was overrun successively by Goths, Huns, and other tribes, of whom the most important were Slavs, who settled here between 3rd and 7th cents. Later in 7th cent. the *Bulgari*, an Asiatic tribe, appeared. Boris I. became Christian (864), and encouraged spread of Christianity in Bulgaria. Gr. emperor, Nikephorus, tried to conquer Bulgaria c. 965, and was aided by Russians under Sviatoslav, who later (969) again invaded country, with some success at first, but was ultimately expelled.

Soon after this Boris II. of Bulgaria was deposed by Greeks, who annexed country in 1018. Bulgaria remained subject to Byzantium till 1186, when Bulgarians rose in revolt and founded Asenide dynasty, which lasted for two centuries, attaining greatest power under Asen II. (1218–41). Turks subdued whole country and established Ottoman rule (1389), which lasted for about four centuries. The Bulgarians seem to have been treated with

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great cruelty and injustice. From about middle of 18th century, through influence of Bishop Sophronius, a revival of literature and education began.

In 1876 occurred the *Bulgarian Atrocities*, when over 15,000 Christians were massacred by Turk. troops with utmost cruelty. By Treaty of Berlin (1878) Bulgaria was constituted as an autonomous and tributary principality, under Sultan's suzerainty; a prince was to be elected by the people. E. Rumelia was by this treaty also made largely autonomous, and was to be ruled by a governor named by Sultan. Alexander of Battenberg was chosen as first prince of Bulgaria (1879), while Prince Vodorides became first governor of E. Rumelia. He was succeeded by Gavril Pasha Krestovich, during whose governorship the two states were united. About same time Serbia declared war on Bulgaria; Serbians were ultimately driven back and peace was concluded. In 1887 Prince Ferdinand of Saxe-Coburg-Gotha was chosen as second prince of Bulgaria; independence of Bulgaria was recognized by powers (1909), when Prince Ferdinand became tsar. In Balkan wars (1912-13) Bulgaria gained territory. In 1915 she joined Central Powers, but surrendered unconditionally to Allies on Sept. 29, 1918. See SALONICA; SERBIA. By Treaty of Neuilly (Nov. 27, 1919) she renounced all claims to Macedonia and Thrace. Ferdinand abdicated on Oct. 4, 1918, and was succeeded by his son, Boris III., the present tsar.

**Bulkheads.** See SHIPS.

**Bulk Modulus.** See ELASTICITY.

**Bull.** (1) Edict of Pope with leaden seal (*bulia*) attached. (2) Irish bulls are seriously made statements containing contradictory terms, with ludicrous effect. (3) One who agrees to buy stock, hoping that, by settlement time the price having risen, he may sell at a profit.

**Bull, JOHN**, a humorous impersonation of the collective Eng. people, conceived of as well-fed, good-natured, justice-loving, and plain-spoken; designation derived from John Arbuthnot's satire, *The History of John Bull* (1712).

**Bull, JOHN** (1563-1628), Eng. composer; organist of Hereford Cathedral, Queen Elizabeth's chapel, and prof. of music at Gresham Coll., London. In 1617 he became organist of cathedral at Antwerp, where he died. Amongst others, he has been claimed as the composer of the National Anthem.

**Bull, OLE BORNEMANN** (1810-80), Norweg. violinist and composer; first professional appearance in Paris (1832); afterwards attained European celebrity, playing in Italy, England, France, and Russia. But the musical public turned against him (1840), and he went to America, where he had immense success.

**Bulla.** See GASTEROPODA.

**Bull-baiting.** See under BEAR-BAITING.

**Bulldog.** See DOG FAMILY.

**Bullen, FRANK THOMAS** (1857-1914), Eng. writer of sea stories; served before the mast as a boy; junior clerk in Meteorological Office; his books include *The*

*Cruise of the Cachalot, The Call of the Deep, A Son of the Sea, With Christ at Sea.*

**Buller**, CHARLES (1806–48), lawyer and politician, M.P. for Liskeard; he accompanied Lord Durham to Canada (1838), and the Durham report (which recommended a system of federation of the Canadian colonies) was attributed to Buller. He became judge-advocate-general and chief poor-law commissioner.

**Buller**, SIR REDVERS HENRY (1839–1908), Brit. general; member of old Cornish family; distinguished himself in Kaffir and Zulu wars and in Sudan; appointed commander-in-chief of S. African Field Force in Boer War (1899); repulsed at Colenso, he was superseded by Lord Roberts as commander-in-chief, but as commander of Natal army finally relieved Ladysmith after an investment of 119 days. See *Life* by Butler (1909).

**Bullet**. See AMMUNITION.

**Bullet Wood**, timber of the balata tree (*Mimusops globosa*), large tree of Brit. Guiana and W. Indies; is chiefly of value as source of balata gum.

**Bull-fighting**, the Spanish national sport since the 11th cent., in which some of the earlier kings used to take part. A modern bull-fight is divided into three parts. After the formal parade around the arena of all those about to take part in the spectacle, the bull is let loose into the ring, and having been already infuriated, he attacks the *picadores* (mounted upon blindfolded horses), who are armed with short pointed lances. The bull almost invariably disembowels

the horses, which are afterwards dragged out, and the *picadores* endeavour to weaken the creature by repeated thrusts with their weapons. The next stage is that of planting darts in the bull's neck by the *banderilleros*; and the final act is the stabbing of the beast to the heart by the *matador* (or, more correctly, the *espada*), armed with a short flat sword. It is estimated that from 5,000 to 6,000 horses and about 1,300 bulls are slain annually in Spain in these spectacles.

**Bullfinch**. See FINCH FAMILY.

**Bullheads** (Cottidæ), small, large-headed, large-finned, tapering fishes found in shallow water and chiefly in Northern seas. A few inhabit fresh water. There are four Brit. bullheads (*Cottus*): the miller's thumb, a prickly little fish common beneath stones in streams (related forms with similar names occur in America); the sea scorpion; the father-lasher; and the four-horned.

**Bulli**, coast tn., New South Wales, Australia (34° 21' s., 150° 59' E.); coal-mining dist.; exports steamcoal. Pop. 1,400. Also name of pass (1,000 ft.) in Illawarra Mts.

**Bullion** (*bullia*, 'a lead stamp'), originally applied to the mint, now to uncoined gold and silver in bars; is also used to distinguish metallic from paper money; occasionally used for coin not allowed to pass or not current at place where it is tendered.

**Bullock**, SHAN (1865– ), Irish novelist, author of *The Awkward Squads*, *The Ring o' Rushes*, *The Red Leaguers*, *Hetty*, etc.; his novels are keenly observant studies of Irish life, full of a kindly humour.

**Bull Run**, stream in N.E. Virginia (38° 50' N., 77° 35' W.); flows between Fairfax and Prince William counties; on its banks Federalists were twice defeated by Confederates (July 21, 1861, and Aug. 29-30, 1862).

**Bull-trout**. See SALMON FAMILY.

**Bülow**, BERNHARD HEINRICH KARL MARTIN, PRINCE VON (1849- ), Ger. statesman, was born at Klein Flottbeck, Holstein. In 1873 he entered the diplomatic service, and in 1878 was secretary of the Berlin Congress. He was successively first secretary of the embassy at Paris (1880) and at Petrograd (1883), minister at Bukharest (1888), and ambassador at Rome (1893-7), when he was appointed Prussian minister of state, and was made count in 1899, after the acquisition of the Caroline and Marianne Islands. In the following year he became chancellor of the German Empire and prime minister of Prussia, in succession to Prince Hohenlohe. He was supported in the Reichstag by the 'bloc'—a combination of Conservatives, National Liberals, and Centre. He resigned in 1909 in consequence of the rejection by the Reichstag of the Government Inheritance Tax Bill. In June 1905 he was raised to the rank of prince. After the outbreak of the Great War he acted as the Ger. ambassador at Rome, but failed to prevent Italy's intervention in the war (June 1915). He retired to Switzerland and was active in peace intrigues. He pub. *Imperial Germany* (1912), and *Memoirs* (1913).

**Bülow**, FRIEDRICH WILHELM, COUNT OF DENNEWITZ (1755-1816), Prussian general; created count for great victory at Dennewitz (1813), repelling Marshal Ney; took part in invasion of France (1814); made celebrated charge at Waterloo.

**Bülow**, HANS GUIDO VON (1830-94), Ger. pianist and conductor; abandoned the law for music, and studied under Hauptmann, Liszt, and Wagner. He was a pianist of the first rank, and obtained fame throughout Europe and America as a masterly conductor. He married the daughter of Liszt, but the union was afterwards dissolved, and the lady married Wagner. One of the most erudite of musicians, his editions of Beethoven and others remain classics.

**Bülow**, KARL VON (1846- ), Ger. field-marshal, member of distinguished Prussian family; served in Franco-Prussian War; became quartermaster-general (1902) and general of infantry (1904). At outbreak of Great War commanded 2nd Army; and on Sept. 9, 1914, in Moltke's name, ordered retreat of 1st Army, which led to whole Ger. retirement to the Aisne (see MARNE, BATTLES OF). Afterwards held a command in the Artois, but retired owing to ill-health during winter of 1914-15. In 1920 pub. *Mein Bericht zur Marneschlacht*.

**Bulrush**. (1) So-called true bulrush is *Scirpus lacustris*, a member of sedge family (Cyperaceæ), native in Europe, Asia, and N. America; is about four feet high and is used extensively in making cane chairs, etc. (2)

More commonly applied to *Typha latifolia*, which together with bur-reed (*Sparganium*) constitutes the Typhaceæ; more correctly to common great reed mace, found practically all over the world on margins of ponds, etc.

**Bulrush Millet** (or AFRICAN, SPIKED, or PEARL MILLET), a tall erect grass widely cultivated in tropical Africa, the grain of which is one of the staple foods of the natives; grown also in India under name of *bagra*.

**Bulsar**, tn. and port, Bombay, India (20° 27' N., 72° 56' E.); cloth and silk weaving; exports timber, grain. Pop. 16,000.

**Bulstrode**, SIR RICHARD (1610–1711), Eng. cavalier and author; joined Charles I. at outbreak of Civil War; was employed abroad by Charles II., and shared in the exile of James II. His *Memoirs* (not published till 1721) contain much valuable and interesting historical matter.

**Bultfontein**, vil., Orange Free State, S. Africa (28° 16' S., 26° 10' E.); diamond mines; rebels, under Beyers, were defeated here (Nov. 1914).

**Bulwer**, WILLIAM HENRY LYTTON EARLE, BARON DALLING AND BULWER (1801–72), diplomatist, brother of Lord Lytton; attaché at Berlin, Vienna, and the Hague; M.P. for Wilton (1830), Coventry (1831), Marylebone (1835), and Tamworth (1868); his name is associated with the Clayton-Bulwer Treaty. He wrote *Historical Characters*, etc.

**Bulwer-Lytton**. See LYTTON.

**Bunbury**, seapt. tn., Wellington, W. Australia (32° 20' S., 115° 40' E.); outlet for timber, coal, tin; favourite holiday resort. Pop. 3,760.

**Bunbury**, HENRY WILLIAM (1750–1811), Eng. caricaturist; one of most celebrated comic artists of his day; praised by Sir Joshua Reynolds.

**Buncombe**. See BUNKUM.

**Buncrana**, mrkt. tn. and wat.-pl., Donegal, Ireland (55° 8' N., 7° 27' W.), on Lough Swilly; agricultural centre; linen; salmon and sea fisheries. Pop. 1,300.

**Bundaberg**, seapt., Burnett R., Queensland, Australia (24° 50' S., 152° 16' E.); sugar factories; coalfields near. Pop. 8,700.

**Bundelkhand**. (1) Tract of country, United Provinces, India (25° 15' N., 80° 14' E.); subject to famine and plague; jowar, cotton, grain. Area, 11,600 sq. m. (2) BUNDELKHAND AGENCY, over twenty native states, Central India (25° N., 79° 30' E.); has unexploited mineral wealth; generally level country. Area, 10,118 sq. m.; pop. 1,375,300.

**Bundesrath**. See under GERMAN EMPIRE.

**Bundi**. (1) Native state, Rajputana, India; maize, jowar, wheat, opium; limestone for building. Area, 2,200 sq. m.; pop. 218,700. (2) Cap. of above (25° 27' N., 75° 39' E.), walled fortifications. Pop. 19,600.

**Bundoran**, vil., wat.-pl., Donegal, Ireland (54° 29' N., 8° 15' W.); bracing climate; natural arch in limestone cliffs; barytes mines in vicinity. Pop. 3,000.

**Bungalow**, Anglo-Ind. word for one-storied house with wide verandah, the typical European residence in tropics; now used for similar house elsewhere. Dak bungalows are houses of rest built by Indian Government for the use of travellers.

**Bungay**, urban dist., par., mrkt. tn., Suffolk, England ( $52^{\circ} 27' \text{ N.}, 1^{\circ} 26' \text{ E.}$ ); ruins of Norman castle and old monastery; large printing works and flour mills. Pop. 3,300.

**Bunge**, ALEXANDER VON (1803–99), Russian botanist; prof. of bot., Kazan; studied plant-life in Volga region, Siberia, the Altai Mts., China, Khorassan, Afghanistan, and Salt Desert of Gobi; works include *Enumeratio Plantarum, quas in China Coreali Collegit* (1831), etc.

**Bunge**, FRIEDRICH GEORG VON (1802–97), Russian jurist; an authority on laws of Baltic Provinces; works include *History of Esthonia under Danish Rule*, and of Riga in 13th and 14th cents.

**Bunion**, swelling caused by chronic inflammation of synovial sac on metatarsal joint of great toe; due mainly to wearing of improperly made boots; treated by correcting the deformity of the great toe by proper boots, manipulation, soothing applications to the swelling, etc.; in very pronounced chronic cases operation is necessary.

**Bunker Hill**, low hill, Charlestown, suburb of Boston, U.S. ( $42^{\circ} 24' \text{ N.}, 71^{\circ} 3' \text{ W.}$ ); granite obelisk marks site of famous battle in Amer. War of Independence (June 17, 1775), when Amer. forces were defeated.

**Bunkum**, slang word now used on both sides of Atlantic for empty talk; word originated from a meaningless speech made by a member of N. Carolina legislature in which he remarked that he was only talking for Buncombe, a county in that state.

**Bunn**, ALFRED (1796–1860),

Eng. theatre manager and librettist; after being stage-manager at Drury Lane Theatre, he eventually undertook the sole management of that theatre and Covent Garden; produced the principal operas of Balfe, the libretti of which he crudely trans.

**Bunsen**, CHRISTIAN CHARLES JOSIAS, BARON VON (1791–1860), Ger. diplomatist; b. Korbach; became secretary and subsequently successor to Niebühr, Prussian envoy to papal court; aided Frederick William IV. to establish Prusso-Anglican bishopric at Jerusalem; rest of his official life was spent as ambassador to court of St. James's; he was recalled by Bismarck, who hated him, on outbreak of Crimean War, for giving impression that Germany might join Britain and France; sat in Prussian Upper House as Baron von Bunsen (1858). Strongly evangelical, he revived the Ger. liturgy and hymn book, and wrote *The Church of the Future* (1845) and *God in History* (1857).

**Bunsen**, GEORG VON (1824–96), Ger. politician, fourth son of BARON C. C. J. VON BUNSEN; leader (1881) of the Sezzionisten or 'Crown Prince's party.'

**Bunsen**, SIR MAURICE DE. See DE BUNSEN.

**Bunsen**, ROBERT WILHELM VON (1811–99), Ger. chemist; successively chem. prof. at Marburg, Breslau, and Heidelberg; famous as the founder, with Kirchhoff, of spectrum analysis; inventor of Bunsen burner (in which gas is sent through a tube which is pierced at the base as well as open at the top; air is thus drawn in, and an intensely

hot non-luminous flame is produced; the principle is utilized in laboratories and in gas stoves); designed cell bearing his name; famous for numerous other researches. His successful methods of teaching attracted many students.

**Bunsen's Cell.** See BATTERY (*Primary and Secondary Cells*).

**Bunter** (from Ger. *bunt*, 'variegated'), lowest section of Triassic rocks; consists of mottled red and green sandstones and conglomerates, with interposed pebble beds; contains few fossils. Attains thickness of 2,000 ft. in Cheshire and Staffordshire.

**Bunting.** See EMBERIZIDÆ.

**Bunting, JABEZ** (1779–1858), Eng. Methodist divine, known as 'Second founder of Methodism,' transforming it into a self-governing Church; president of Wesleyan Coll. at Hoxton (1835).

**Buntz, KARL** (1845– ), Ger. civil servant; consul-general, and then director of Hamburg-America line at New York; imprisoned by U.S. Federal courts for plotting to compromise Amer. neutrality during early months of Great War.

**Bunyan, JOHN** (1628–88), Eng. religious leader and writer; born near Bedford, of humble parentage. He spent a careless boyhood, but it was gradually borne in upon him that he was extraordinarily wicked, although he never seems to have lived an immoral life, swearing being his only vice. He married in 1648, gradually gave up his amusements and dancing, and led a religious life, but could find no inward peace. At length he became happier, and preached

the gospel. But Nonconformist preaching was not tolerated, and in 1660 he was imprisoned in Bedford jail. In prison he wrote his *Grace Abounding to the Chief of Sinners*, describing his own religious conflicts. He was released for a short time in 1662, and again imprisoned till 1678. In 1678 appeared his *Pilgrim's Progress*, one of the most famous religious books in English. Before his death it was read widely in England, New England, and among foreign Protestants. Written in the form of an allegory, it has appealed to successive generations of readers, though, as a modern authority points out, it was for long read almost only by the lower orders of society. His position among Baptists was such that he was called 'Bishop Bunyan,' and though he sometimes feared persecution he was never again imprisoned. He was pastor of the Bedford Church for sixteen years. He pub. *The Life and Death of Mr. Badman* in 1680, and more than fifty other works. For full list see Doe's *Catalogue* (1691).

*Lives* by Southey, Froude, Venables, and Hale White (1904).

**Bunzlau, tn., Silesia, Prussia** (51° 16' N., 15° 36' E.); woollens, linens, brown stoneware pottery. Pop. 16,000.

**Buonaparte.** See BONAPARTE.

**Buonarroti.** See art. MICHEL-ANGELO.

**Buoyancy.** See ARCHIMEDES; HYDRO-MECHANICS.

**Buphane**, genus of bulbous plants of order Amaryllidaceæ; S. African species produces large bulb, as big as a Rugby football, standing halfway out of ground;



contains an alkaloid, used as arrow poison by natives.

**Buprestidæ.** See under POLYMORPHA.

**Buran**, very cold wind occurring in Russia and Central Asia.

**Burano**, tn. and isl., Venetian lagoon, Italy (45° 28' N., 12° 26' E.); lace and glass. Pop. 8,000.

**Burauen**, town, Leyte, Philippines (10° 58' N., 124° 55' E.); hemp. Pop. 18,200.

**Burbage**, JAMES (d. 1597), Eng. actor and manager; built the Shoreditch Theatre (1576), the earliest in London; and the Blackfriars Theatre (1596).

**Burbage**, RICHARD (d. 1619), son of the above, was the most famous actor of his day, excelling especially in Richard III. and other tragic parts. He pulled down the Shoreditch Theatre and erected the Globe, in the proprietorship of which he was associated with Shakespeare and others. (Quiller-Couch, *Shakespeare's Christmas*.) He was also an artist, and the 'Felton' Shakespeare portrait is said to have come from his brush.

**Burbank**, LUTHER (1849- ), Californian horticulturist; has produced many new varieties of plants—e.g., Burbank potatoes, Shasta daisy, stoneless plum, pineapple quince, etc.; has written *New Creations in Fruits and Flowers*.

**Burbot**, EEL-POUT, or RABBIT-FISH (*Lota vulgaris*), only Brit. freshwater member of cod family, found in Eng. streams as well as in N. Europe and Siberia.

**Burbridge**, SIR RICHARD (1847-1917), Eng. merchant and philanthropist; became managing director of Harrods' Stores, Lon-

don, which he greatly enlarged; chairman of Hudson Bay Co.; practical supporter of reduction of shop employees' hours; many war activities; cr. baronet (1916).

**Burckhardt**, JACOB (1818-97), Swiss\* author; his writings are on art subjects, and include *Der Cicerone: eine Anleitung zum Genuss der Kunstwerke Italiens* (1855), *Die Cultur der Renaissance in Italien* (1860), Eng. translations of which are published.

**Burckhardt**, JOHN LEWIS (1784-1817), Swiss explorer and student of Oriental life and language; b. Lausanne; explored interior of Africa; bequeathed his collection of Oriental MSS. to Cambridge Univ.

**Burdeau**, AUGUSTE LAURENT (1851-94), Fr. statesman and author; president of Chamber of Deputies (1894); able exponent of financial questions; trans. several vols. of Herbert Spencer.

**Burdekin**, river, Queensland, Australia (18° 30' S., 145° 25' E.); drains sugar-growing country.

**Burden**, term applied formerly to tonnage measurement of a ship. See DISPLACEMENT.

**Burder**, GEORGE (1752-1832), English Congregationalist minister; noted preacher and sermon writer; was chief founder of Religious Tract Soc. (1799) and of Brit. and Foreign Bible Soc. (1804).

**Burdett**, SIR FRANCIS (1770-1844), Eng. Radical politician; advocated parl. reform, removal of R.C. disabilities, ballot, universal male suffrage, etc.; twice imprisoned for political reasons.

**Burdett-Coutts**, ANGELA GEORGINA, BARONESS (1814-1906), Eng. philanthropist; inherited £2,000,000 from her grandfather,

and took additional name Coutts; married William Lehman Ashmead Bartlett (1881); founder of many charitable institutions.

**Burdett-Coutts**, WILLIAM LEHMAN ASHMEAD BARTLETT (1851- ), M.P. for Westminster since 1885, American by birth; married (1881) Baroness Burdett-Coutts and assumed her name; interested in social and philanthropic work; was an originator of the Fisheries Exhibition; strong advocate since 1902 of railway reform.

**Burdon-Sanderson**, SIR JOHN SCOTT, Bart. (1828-1905), Eng. physiologist; Jodrell prof. of physiology (1874), Univ. Coll., London; Waynflete prof. of physiology (1882), and regius prof. of med. (1895), Oxford; a great advocate of value of experiments on animals; he was violently opposed by the antivivisectionists, including Ruskin and Freeman.

**Burdur**. See BULDUR.

**Burdwan**. (1) Dist., Bengal, India; flat, well-watered plain; silk-weaving; coalfields; indigo. Area, 2,689 sq. m.; pop. 1,532,400. (2) Tn., cap. of above (23° 14' N., 87° 51' E.); palace and gardens of maharajah; tombs and temples. Pop. 35,000.

**Bureaucracy**, system of government in which various departments are controlled by officials independent of the electorate.

**Buren**. See VAN BUREN.

**Burg**, tn., Prussian Saxony, Germany (52° 16' N., 11° 51' E.); cloth, boots. Pop. 24,100.

**Burgage Tenure**, tenure in anc. English boroughs, whether royal or mesne, the *burgensis* owing a fixed anc. rent for his

*burgagium*. In Scotland it only existed in royal burghs, and remained important until the Conveyancing Act (1874). *Burgagia* in some boroughs (perhaps always those of Saxon origin) descended according to Borough English.

**Burgas**, seapt. tn., Bulgaria (42° 30' N., 27° 25' E.); vineyards; exports grain, wool, butter. Pop. 11,000.

**Burgas**, LULE. See under BALKAN WARS.

**Burger**, GOTTFRIED AUGUST (1748-95), Ger. poet; famous as the author of the ballad *Lenore*, which first appeared in the Gottingen *Musen Almanach*, in 1773. This essay in the supernatural was very widely read, and was trans. into English by Sir Walter Scott. None of Burger's other writings achieved very great popularity, and his ill-regulated life ended in failure and pecuniary want.

**Burger**, SCHALK WILLIAM (1852-1918), Transvaal statesman; twice president of republic (1877 and 1900); served on the Tugela under Botha in war of 1899-1902; upheld loyalty to Britain during the Great War.

**Burgers**, THOMAS FRANÇOIS (1834-81), president of Transvaal republic (1872-7). His presidency revealed weakness of Transvaal, and terminated with its annexation to Britain (1877).

**Burgess**, an inhabitant of a bor. who enjoys the privileges of full membership of the munic. corporation. Since 1835, the burgesses in every bor. consist of those persons who appear on the burgess roll of munic. electors. Women who possess the requisite qualifications are enrolled and

may sit on bor. councils. Aliens, and persons who during previous twelve months have received union or parochial relief, or who have been disentitled under any Act of Parliament, cannot be enrolled as burgesses. Persons of distinction, or persons who have rendered eminent service to the bor., may be admitted as honorary freemen, but this does not entitle them to vote at an election, or share in any property of the bor. In Scotland, burgess and municipal elector are not synonymous. The special privileges of burgesses, connected with membership of merchants' houses, trade guilds, and other bor. incorporations, belong to burgesses who have been created or admitted in accordance with usage of the bor. Householders of three years' standing, who have paid their rates, are made statutory burgesses, but do not enjoy above-mentioned privileges, though their widows and children are given the same rights as belong to the widows and children of burgesses created or admitted in accordance with usage. Honorary burgesses may be appointed as in England.

**Burgess, EDWARD** (1848-1901), Amer. yacht designer, designed *Puritan*, a centreboard yacht, which beat the Eng. *Genesta* in 1885. His *Mayflower* won the race with *Galatea* (1886), and his *Volunteer* beat *Thistle* (1887).

**Burgess, JAMES** (1832-1916), Ind. archaeologist, founded the *Indian Antiquary* (1872); director-general of the archaeological surveys of India. His best-known work is *The Cave Temples of India*.

**Burgess, JOHN BAGNOLD** (1829-97), Eng. genre painter; excelled in Span. subjects; best works are *Stolen by Gypsies*; *Spanish Mendicant Students*.

**Burgess, THOMAS W.** (1873- ), Brit. swimmer who, emulating Captain Webb, crossed Eng. Channel in 22 hours 35 min. in 1911.

**Burgh, HUBERT DE** (d. 1243), Eng. chief justiciar (1215-31); held important offices under John, and received custody of Arthur of Brittany, whom he is said to have preserved from being blinded (1201); repulsed Fr. invasion (1217); ruled kingdom in minority of Henry III., dismissing foreign mercenaries. Burgh was a great and popular minister.

**Burghers and Anti-Burghers**, party which seceded from Church of Scotland (1732), and differed among themselves as to the burgess oath, separating in 1747; joined to form United Associate Synod of the Secession Church (1820); united with the Relief Church to form the United Presbyterian Church (1847).

**Burghersdorp**, town, Cape of Good Hope, S. Africa (31° s., 26° 18' E.); in hands of Boers for first six months of S. African War. Pop. 2,900.

**Burghley** (or BURLEIGH), WILLIAM CECIL, BARON (1520-98), Eng. statesman; M.P. for Stamford (1547); fought at Pinkie Cleugh; master of requests and secretary of Protector Somerset (1548); chancellor of the Garter (1552); not prominent under Mary, but made chief secretary of state on accession of Elizabeth, who said to him: 'This judgment I have of you, that you will not

be corrupted with any manner of gifts, and that you will be faithful to the state'—a speech regarded as outlining Cecil's character; from this time his policy was the queen's; master of court of wards (1561); lord high treasurer (1572); claim to fame is that of successful administrator, his spy system being the only blot on his administration.

**Burgin, GEORGE B.** (1856—), Eng. novelist and journalist; sub-editor of *The Idler* (1885–99); author of numerous novels.

**Burglary.** See THEFT.

**Burgomaster** (German, *bürgermeister*, 'master of the borough'), head of corporation of a German or Dutch town.

**Burgon, JOHN WILLIAM** (1813–88), Anglican divine; attacked R.V. of Bible and defended conservative theological positions; Dean of Chichester (1876).

**Burgos.** (1) Prov., N. Spain; E., mountainous; w., part of old Castile tableland; poor soil; vines, merino sheep. Area, 5,480 sq. m.; pop. 395,700. (2) Tn., cap. of above prov. (42° 22' N., 3° 43' W.); fine Gothic cathedral, begun 1221; leather, cloth, hosiery. Pop. 31,500.

**Burgoyne, ALAN HUGHES** (1880—), M.P. for Kensington (since 1910); associate of Institution of Naval Architects; served in France, Palestine, and India during Great War (lieut.-col. 1918); attached to H.Q. staff; controller of the Priority Dep.

**Burgoyne, JOHN** (1722–92), Brit. general, politician, and playwright; caused general outcry by surrendering to Amer. forces at Saratoga (1777); wrote several dramas, including *The Maid of the Oaks* and *The Heiress*.

**Burgundians**, a political faction whose warfare with the Armagnacs in the earlier part of the 15th cent. threatened to destroy the unity of France. See ARMAGNACS.

**Burgundy**, or BOURGOGNE, anc. prov., France; historic cap. Dijon (47° 19' N., 5° 2' E.); named after Burgundii, who founded kingdom in S.E. Gaul in 5th cent.; overcome by Franks (534). On break-up of Charlemagne's empire, two kingdoms of Burgundy were established; these were united as kingdom of Arles in 933; annexed to Ger. Empire (1032). Duchy founded in 887; on the death of Duke Philip in 1361 it was attached to Fr. crown. During 14th and 15th centuries its rulers by a balancing policy attained almost sovereign power. On death of Charles the Bold it reverted to Fr. crown (1477). Soil is fertile; famous for wines and agricultural produce.

**Burgundy Pitch** is prepared by melting and straining exudation from stem of spruce fir; is used as a basis for plasters.

**Burgundy Wine.** See WINE.

**Burhanpur**, tn., Central Provinces, India (21° 18' N., 76° 14' E.); anc. seat of Deccan princes of Mogul Empire; cottons, silks, gold wire. Pop. 33,300.

**Burial.** Like modern nations of Europe, many primitive and Oriental peoples have practised *inhumation* (the burial of corpses in the earth), and with it many interesting customs are associated: the Australian aborigines take off the nails of the corpse and tie its hands so that it may not be able to work its

way out again; with the Norse warrior were buried his horse and armour, ready for his ride to Valhalla; the Laplander places beside the corpse steel, flint, and tinder for the dark journey, and nearly every primitive people gives evidence of thoughtfulness for the needs of the next life; the classic instance is the coin placed by the Greeks on the tongue of the deceased to pay Charon for ferrying him over the Styx, and the honey-cake provided for Cerberus. The Parsees are almost alone in exposing the corpse to disintegration.

*Cremation* (Lat. *crematio*, 'burning by fire'), burning of dead human bodies to ashes, was practised by the later Greeks, Romans, Danes, etc., evidence being found in barrows of all countries of Europe. Christian inhumation was universal, probably owing to doctrine of resurrection of body, but Cremation Societies were formed in 19th cent., and cremation is urged on sanitary grounds. Burial Acts (see below) have made reforms in system of inhumation, but cremation remains preferable from health standpoint; sole object of cremation, as described by pioneer, Sir Henry Thompson, is to resolve dead body into its final constituents of carbonic acid, water, and ammonia 'rapidly, safely, and not unpleasantly.' Apparatus invented by Prof. Brunetti was exhibited at Vienna Exhibition (1873), for completely consuming body in six hours, with fuel costing 2s. 4d. The first Ger. crematorium was established at Gotha (1878). An Eng. Cremation Society was es-

tablished in 1874, under presidency of Sir Henry Thompson; one acre of land at Woking purchased (1878), and Prof. Gorini of Lodi invited to build furnace; Home Office forbade cremation without special leave; government refused to undertake cremation, and in 1882-3 private cremations took place; lawsuit terminated in a judgment that cremation might lawfully be performed if no nuisance was caused; cremations commenced at Woking in 1885, and have since become frequent, nearly all large towns possessing *crematoria*. Christian objections are answered by instance of martyrs who expect resurrection; obviously cremation might be utilized for disposal of murdered persons, but examination of cause of death is one of great features of movement; regulated by Cremation Act (1902). Enough fear of being buried alive exists to have given rise to an institution which guarantees thorough medical examination to its members, post mortem.

Numerous Acts from 1852-1900 impose regulations as to burial, and are hence known as *Burial Acts*. By them Home Office (or Local Government Board) is empowered to close burial ground and make all sanitary provisions for interment or disinterment; its consent is necessary for opening burial ground; burial grounds in each parish were at first put under the control of burial board composed of ratepayers elected by vestry, but were later transferred to control of urban district and parish councils. In disused churchyards only buildings for

religious purposes may be raised, but they may be converted into public recreation grounds by the local authority. Corpses may be removed for sanitary or judicial reasons on authorization by ordinary, home secretary, or coroner. Burials (except in case of suicides) may take place in consecrated ground without religious service; Church of England clergymen are permitted in case of necessity to perform burial service in unconsecrated ground. 'Body-snatching' for sale to anatomists was carried on to great extent in early 19th cent., and its profitableness led to murders by the 'Resurrection' men, notably by Burke and Hare; it was one of the social evils exposed by Dickens.

*Burial Societies* are associations to provide for payment of burial expenses of members, children and wives and widows of members.

**Burian, STEPHEN, BARON, OF RAJEJCZ** (1851- ), Austro-Hungarian statesman, of Slovak descent; as Austro-Hungarian consul at Moscow acquired a knowledge of Russian affairs; later as minister at Athens and afterwards administrator of Bosnia-Herzegovina, he became intimately acquainted with Balkan politics. In Jan. 1915 he was appointed foreign minister by Count Tisza, and in this capacity had to handle diplomatic relations with Italy, which were becoming every day more strained. His reluctance to make concessions resulted in the declaration of war (May 1915). Influenced by Germany, he adopted a similar attitude towards the demands

of the pro-Austrian Poles, and his diplomatic blundering was severely criticized by the Hungarian Parliament. Afterwards he took the lead in approaching other Central Powers with a plan for peace proposals, culminating in offer of Dec. 1916. After the resignation of the government at that time, he remained in retirement, till recalled in April 1918, only remaining in power for a short time, and being succeeded by his opponent, Count Andrássy, who accepted the terms of peace.

**Buriats**, Mongol race of E. Siberia, around Lake Baikal; mostly nomads engaged in pastoral occupations.

**Buridan, JEAN** (fl. 1358), Fr. rationalist philosopher; wrote a *Compendium Logicæ*, and numerous similar works.

**Buriti Palm**, common name for *Mauritia flexuosa*, also known as Moriche or Ita palm, peculiar to tropics of S. America; cord is made from leaves, wine from sap, and a substance resembling sago is produced from the stem.

**Burke, EDMUND** (1729-97), Brit. statesman, writer, and orator; b. (probably) Dublin. From a school at Ballitore, Kildare, he proceeded to Trinity Coll., Dublin (1743-8), where he devoted himself to extensive but desultory reading. He entered Middle Temple, London (1750), but soon abandoned law for literary work. In 1756 he wrote *A Vindication of Natural Society*, a satire upon Bolingbroke, and also a *Philosophical Inquiry into the Origin of our Ideas on the Sublime and Beautiful*. From 1759-88 he contributed largely to the *Annual Register*.

Burke was private secretary to Hamilton, secretary for Ireland (1761-3), and to the Marquess of Rockingham (1765). Entering Parliament for Wendover, he soon became prominent as the great Whig defender. After the failure of the Rockingham administration (1766), Burke held no office till 1782, but his public activity never ceased. He drew up all the principal protests of his party between 1767 and 1782. In his *Thoughts on the Cause of the Present Discontents* (1770) he attacked the 'system of double government' and defended party government against both George and Chatham. He was the greatest orator and thinker of the Whigs, and his speeches were not merely weapons for the moment, but permanent treasures of political wisdom.

The accession of Charles James Fox, a brilliant seceder from North's ministry, to Whig party, was largely due to Burke's teaching and influence. Under Fox and Burke the 'New Whigs' became purged of the old party leaven. Burke was chosen a representative for Bristol (1774). During events which ended in emancipation of Amer. colonies, Burke showed unrivalled knowledge and zeal on Amer. questions. His *Speech on Conciliation* appeared in 1775. In the second Rockingham ministry (1782) Burke became paymaster of the forces, and was entrusted with the great plan of economical reform. He had lost his Bristol seat (1780) as a result of his advocacy of Irish claims to similar indulgences as America. During remainder of his parliamentary life he sat for

Malton, a pocket borough. On Rockingham's death (July 1782), Burke and Fox declined to serve under Shelburne, and joined North in coalition against him. The coalition forced on king a government nominally headed by Duke of Portland (1783). Burke returned to his office of paymaster. Rejection of India Bill resulted in dismissal of ministers (Dec. 1783), and Pitt accepted the premiership. Burke was soon engaged in his famous impeachment of Warren Hastings, whose trial began in Feb. 1788, but was more famous for oratory than for its results, and finally ended in Hastings's acquittal (1795).

Burke's attitude towards the Fr. Revolution ended some of his political friendships. He had already incurred some unpopularity owing to his vehemence in debates on the India Bill and on Hastings's impeachment. In debate on the Canada Bill (May 1791) Burke inveighed against the Revolution in answer to Fox's praise of the new Fr. constitution. A public rupture between Fox and Burke resulted.

Burke's *Reflections on the French Revolution* (Nov. 1790), followed by his *Appeal from the New to the Old Whigs*, greatly influenced English opinion. He viewed the Revolution with misgivings from the first. At close of 1794 Burke left Parliament. He refused to accept anything from king but a pension. He wrote against Pitt's anxiety for peace in his *Letters on a Regicide Peace* (1796).

A self-confident statesman and political genius, champion of the

old order of Europe, Burke was a great man, despite some eccentricities and aberrations.

*Select Works of Burke*, Clarendon Press (1897); Prior, *Memoir of the Life and Character of Edmund Burke* (1824); John Morley, *Edmund Burke* (1879).

**Burke**, SIR JOHN BERNARD (1815–92), Eng. genealogist; son of John Burke, whose work he continued as the compiler of *Burke's Peerage*, pub. annually since 1847; Ulster king-at-arms (1853); knighted (1854).

**Burke**, ROBERT O'HARA (1820–61), Australian traveller; b. Ireland; educated Belgium; became a captain in Austrian army; member of Royal Irish Constabulary (1848); emigrated (1853), and became a police inspector at Melbourne; led heroic, ill-fated expedition across Australian continent (1860–1); died of starvation on return journey.

**Burke**, THOMAS HENRY (1829–82), popularly known as 'Father Tom,' Irish R.C. preacher; founded Dominican house of study at Tallagt, near Dublin. His eloquence gained him a reputation both in Rome and in the U.S. He wrote *English Misrule in Ireland*.

**Burke**, WILLIAM (1792–1829), Irish murderer; was implicated (1827–9) with William Hare in a series of murders in an Edinburgh lodging-house; the victims were suffocated ('burked'), and the bodies sold for anatomical purposes; Hare turned king's evidence; Burke was hanged.

**Burleigh**. See BURGHLEY.

**Burleigh**, BENNET (c. 1839–1914), Brit. war correspondent, fought during Amer. Civil War;

was correspondent for Central News and afterwards for *Daily Telegraph* during first Egyptian War; and also described Madagascar, Sudan (1884), Ashanti, Athara, and Omdurman expeditions. Later he witnessed the Somaliland expedition, Russo-Jap. War, and Ital. campaign in Tripoli; author of *Sirdar and Khalifa, Natal Campaign*, etc.

**Burleson**, ALBERT SIDNEY (1863– ), Amer. politician; postmaster-general in President Wilson's cabinet; at the beginning of April 1917 he suspended the mail service from the U.S. to enemy countries.

**Burlesque** (Ital. *burlesco*), the literary treatment of a serious theme in a comic way; favourite *genus* in every age, representing constant human dislike of tension of emotion. The Homeric epic was burlesqued in the *Batrachomyomachia* (Battle of the Frogs and Mice), and there was much mediæval burlesque in so-called *Pasiones*. Mediæval Fr. *soties* were blend of satire and burlesque; great feature of the Renaissance, which produced the *Orlando Innamorato* of Berni, *Don Quixote*, and *The Knight of the Burning Pestle*. The burlesque is distinguished from the modern farce by its seriousness of treatment and different quality of the amusement raised. See EPIC (Mock); PARODY.

**Burlington**. (1) City, Iowa, U.S. (40° 49' N., 91° 10' W.); railway centre; machinery, soap and linseed oil, flour, etc. Pop. 24,300. (2) City and lake port, Vermont, U.S. (44° 30' N., 73° 14' W.); lumber centre; marble and limestone quarrying; pack-



ing boxes, refrigerators, etc. Pop. 20,400. (3) City and river port, New Jersey, U.S. (40° 3' N., 74° 51' W.); iron pipes, canned goods, shoes, dairying and market gardening. Pop. 8,300.

**Burma**, large prov. in S.E. of Ind. Empire (10°–27° 20' N., 92° 11'–110° 9' E.), 1,100 m. in extreme length, 700 in breadth; bounded N. by China, E. by China, Fr. Indo-China, and Siam, S. by Bay of Bengal, W. by Bay of Bengal, Bengal, Manipur, Assam; includes Upper and Lower Burma. Latter comprises Arakan, Pegu, and Tenasserim, all belonging to Britain; former has belonged to Britain since 1885, previous to which it was the kingdom of Burma.

Surface is mountainous, with vast forests of teak and bamboo; river plains or deltas at river mouths are only flat parts, and are flooded in wet season; principal mountains are the Patkoi Hills in N., the Kachin, Shan, and Karen Hills in E., Pegu Yoma and Arakan Yoma; chief rivers, Irawadi, Sittang, Salwin; climate trying; huge rainfall up country; chief towns, Rangoon (cap.), Mandalay (native cap.).

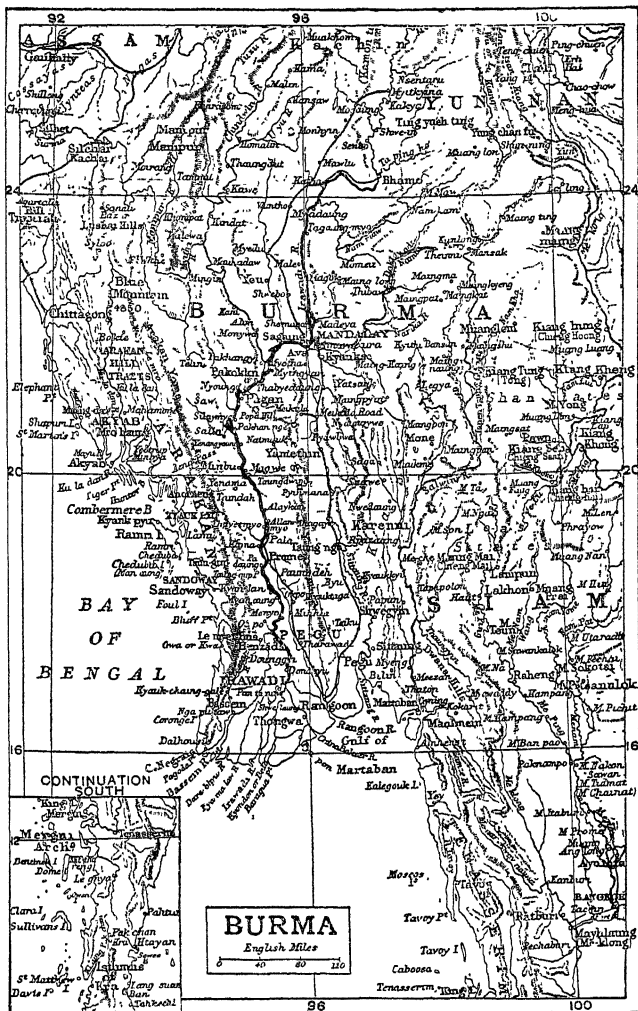
Rice is largely cultivated in both Upper and Lower Burma, and is chief export. Teak, oil-tree, ironwood, and palms are among valuable trees, and many fruits are grown, including bananas, pineapples, guavas. Tobacco, sugar-cane, tea, cotton, are cultivated; many varieties of precious stones found; rich ruby mines in upper district beyond Mandalay; sapphires and other gems, jade, etc. Minerals include gold, silver, copper, tin,

iron, wolfram, petroleum. All these are exported, also rice, teak, bamboo, cotton, hides, wax, ivory, gum, rubber, oil. People display skill in silver repoussé work, wood carving, lacquer work, silk weaving; imports, European manufactured goods. Rivers are chief means of communication; Irawadi navigable all year. Roads and railways have developed greatly under Brit. administration. Area, 230,839 sq. m.; pop. 12,115,200.

Inhabitants include Burmese, who form great majority of population, Karens, Talaiings, Chins, Shans, and other races. Burmese proper are of Mongoloid stock, are brown-skinned, black-haired, and robust in figure. About 90 per cent. are Buddhists, other religions including Hinduism, Christianity, and Islamism. The language is akin to Shan and Tibetan tongues. Ancient or Pali literature consists chiefly of Buddhist scriptural writings. Burmese modern literature includes plays, rhymed fables, historical and religious works.

Administration is carried out by lieut.-gov., assisted by a legislative council of 17 members; lieut.-gov. is nominated by gov.-gen.; prov. is subdivided into 8 divs., each administered by a commissioner. Northern and Southern Shan States are administered through Sawbwas or hereditary chiefs.

*History.*—Early history rests on tradition. Upper Burma was powerful kingdom in 11th–13th cent. A.D.; and in 14th–15th cent. the two chief powers were those of Ava in N. and Pegu in S. Pegu was one of several old



kingdoms in Lower Burma; it held the supreme power in 16th cent., when the Irawadi and Sit-tang valleys were included in its dominions. It came to an end in middle of 18th cent., when new Burmese Empire was established by Alompra. First Burmese War caused by Burmese encroachments on Brit. possessions; Brit. Government declared war (1824); ended by Treaty of Yandalor (1826), which granted Brit. terms. Second Burmese War (1852), provoked by bad treatment of Brit. merchants at Rangoon; resulted in annexation of Pegu. Third Burmese War (1885-6), caused by attempt on part of Burmese Government to hinder trade between Bombay and Burma; Brit. army crossed frontier (Nov. 14, 1885), occupied Mandalay (Nov. 28), and sent Burmese king, Thebaw, to Rangoon. Upper Burma was formally annexed, Jan. 1, 1886.

Ireland, *The Province of Burma* (1907); Mar, *The Romantic East—Burma, Assam, Kashmir* (1906); Phayre, *History of Burma* (1883); Scott, *Burma* (1911); Nisbet, *Burma under British Rule and before* (1901).

**Burmese Lacquer**, known in India as 'thilsi,' is obtained from black varnish tree, *Melanorrhæa usitata*; used in Burma as wood varnish and for rendering cloth waterproof; only dries in damp, cool atmosphere, and for this reason useless in Europe.

**Burn**, AMOS (1848- ), one of the best Eng. amateur chess players; has won international tournaments at Nottingham, Amsterdam, and Cologne.

**Burnaby**, FREDERICK GUSTA-

VUS (1842-85), Eng. soldier and traveller; entered Royal Horse Guards (1859); made an adventurous journey on horseback to Khiva (1875-6), an account of which he pub. in his *A Ride to Khiva*; made several aeronautical ascents, and crossed Channel in a balloon (1882); was engaged in Suakin campaign (1884), and wounded at El-Teb; killed at Abu Klea (Nile Expedition).

**Burnand**, SIR FRANCIS COWLEY (1836- ), Eng. humorist; editor of *Punch* (1880-1906); knighted (1902); author of *Happy Thoughts* and *Happy Thoughts Series*, and, in his earlier years, of innumerable burlesques and farces.

**Burne**, SIR OWEN TUDOR (1837-1909), Eng. soldier, distinguished himself during Indian Mutiny; was chief of political and secret department of India Office (1874), and later private secretary to viceroy, Lord Lytton; was promoted major-general (1889); author of *Clyde and Strathnairn*.

**Burne-Jones**, SIR EDWARD, Bart. (1833-98), English artist; b. Birmingham; educated Oxford, where he formed a friendship with William Morris, and became deeply impressed with paintings of D. G. Rossetti, under whom he afterwards studied. Being a fine class. scholar, and an enthusiastic student of Chaucer and the earlier Eng. writers, his mind was richly stored with mythological and mediæval lore, which he turned to useful account in his choice of subjects for pictures, decorative work, and stained-glass designs, of which latter he produced an immense number. He undoubt-

edly exercised a strong influence upon the art of his time, and stands out conspicuously among great artists of the 19th century.

*Memorials of Edward Burne-Jones*, by Lady Burne-Jones; *Life* by Julia Cartwright (1894).

**Burnes**, SIR ALEXANDER (1805-41), Scot. traveller; entered the service of the E. India Co. in 1821; later made extensive journeys through Afghanistan to Bokhara and Persia, accounts of which he pub. (1834); assassinated by Afghan mob at Kabul.

**Burnet**, term applied to three Brit. species of *Poterium*, herbs of Rose family.

**Burnet**, GILBERT (1643-1715), Anglican bishop and historian; b. Edinburgh; educated Marischal College, Aberdeen; took orders in the Episcopal Church; prof. of divinity at Glasgow (1669). He received preferments from Charles II., but, venturing to reprove the king upon one occasion, lost Court favour; settled in Holland and became attached to interests of William of Orange, on whose accession he was made Bishop of Salisbury, which office he filled with conspicuous ability; mainly responsible for establishment of Queen Anne's Bounty. He was the author of a *History of the Reformation of the Church of England* (1679-1714), but is chiefly remembered by his valuable *History of My Own Times* (1723), pub., by his own desire, after his death.

Clarke and Foxcroft, *Life of Gilbert Burnet* (1907).

**Burnet**, JOHN (1784-1863), Scot. engraver and painter; executed large plates of Wilkie's works, painted landscapes, and

the well-known *Greenwich Pensioners*; wrote several works, including *Practical Treatise on Painting*.

**Burnett**, riv., Queensland, Australia, enters Pacific at Bundaberg (24° 50' S., 152° 16' E.). The Australian lung-fish (*Ceratodus forsteri*), the 'living' fossil, is found in the river.

**Burnett**, FRANCES ELIZA HODGSON (1849- ), English-Amer. novelist; she has written many novels, some of them tales of her native Lancashire, others dealing with Amer. scenes and characters. She achieved her greatest success in *Little Lord Fauntleroy*, a fairy tale of real life, the dramatization of which brought Mrs. Burnett over £20,000. Among her best-known works are *That Lass o' Lowrie's*, *Little Saint Elizabeth*, *A Lady of Quality*, *The Pretty Sister of José*, *The First Gentleman of Europe*, etc.

**Burney**, CHARLES (1726-1814), Eng. musician; won considerable fame as an organist. Besides operatic pieces, he wrote numerous sonatas, concertos, and anthems. He is chiefly remembered for his exhaustive *History of Music* (1776-89), and for the descriptions of his musical tours. His life was written by his daughter Fanny, Mme. d'Arblay.

**Burney**, CHARLES (1757-1817), Eng. class. scholar, son of above, was reputed the best Gr. critic in the kingdom; ed. *Monthly Review* and *London Magazine*, and pub. *Metris Aischyli* (1809).

**Burney**, FANNY. See under D'ARBLAY.

**Burnham**. (1) EDWARD LEVY LAWSON, 1ST BARON (1833-1916), ed. and proprietor of *Daily Tele-*

*graph*, organized, with Mr. Gordon Bennett, H. M. Stanley's African expedition (1874-7); sent George Smith to Nineveh, Sir Harry Johnston to Kilimanjaro, and Lion Decle from Cape to Cairo; many charitable schemes owed their organization to his paper, such as the Prince of Wales's Hospital Fund; received his peerage in 1903. (2) **HARRY LAWSON WEBSTER LAWSON** (1862- ), 1st Viscount (cr. 1919); succeeded his father in 1916; president of Empire Press Union; chairman Labour Employment Council; M.P. (Tower Hamlets) 1910-16; presided over committee on salaries of teachers in elementary schools (reported Nov. 1919), and produced the 'Burnham scale.'

**Burnham**, **FREDERICK RUSSELL** (1861- ), Amer. scout, entered service of Brit. S. Africa Co. and fought against Matabele, etc.; was summoned by Lord Roberts from America for special service during Boer War, when he distinguished himself greatly and was awarded the D.S.O.

**Burnham Beeches**, picturesque fragment of anc. forest, Bucks, England (51° 30' N., 0° 40' W.); preserved for public use by Corporation of London.

**Burnham-on-Crouch**, wat.-pl., Essex, England (51° 37' N., 0° 49' E.), 11½ m. S.E. of Maldon; boat building. Pop. 3,190.

**Burnie**, seapt., Tasmania (41° 5' S., 145° 56' E.); iron mines, copper, etc. Pop. 2,900.

**Burning Bush**, popular name for *Dictamnus fraxinella*, or bastard dittany, a hardy flower, usually of purple colour, which thrives in almost any soil.

**Burnley**, mrkt. tn., parl. and co. bor., E. Lancashire, England (53° 47' N., 2° 14' W.); extensive cotton weaving, iron founding, loom making, and coal mining. Pop. 106,800.

**Burnous**, or **BURNOOSE**, a hooded cloak, generally of wool, worn by Arabs.

**Burns**, **SIR GEORGE** (1795-1890), British shipowner; son of the Rev. John Burns of Glasgow; became one of the founders of the Cunard line of steamships; cr. baronet (1889); succeeded by his son **JOHN** (1829-1901), who became head of the Cunard Co., and was cr. Baron Inverclyde (1897).

**Burns**, **RT. HON. JOHN** (1858- ), Brit. politician; b. London; worked as an engineer; imprisoned (1887) for asserting right to hold mass meetings in Trafalgar Square; a leader of the great dock strike (1889); elected to London County Council (1889); M.P. for Battersea (1892-1918); president of Local Government Board, with seat in cabinet, in ministries of Sir H. Campbell-Bannerman (1905) and Mr. Asquith (1908), the salary of his post being raised during his tenure from £2,000 to £5,000 to mark its increase in importance. In August 1914 he resigned his post on the war question. In office, without having inaugurated any great measures of reform, he has set an example of efficient administration.

**Burns**, **ROBERT** (1759-96), Scot. poet; son of William Burness, a small farmer who lived in a clay cottage built with his own hands at Alloway, near Ayr. Robert, first of seven children, was born Jan. 25; he

went to school at the age of six, and was afterwards taught by a tutor named Murdoch. His father was always a poor man, and unsuccessful in all his ventures, but he was of studious habits, and this trait seems to have been transmitted to his son, for during his early youth the poet steeped his mind in the Eng. classics, and so laid the foundation of that virile prose style which afterwards became remarkable. He also mastered the first six books of Euclid, and even dabbled in Latin. Meantime the father had removed to Mount Oliphant, a larger farm, and here Robert, at the age of fifteen, became his father's assistant, and led for the following ten years a life of hard toil. The elder Burns died when Robert was twenty-five years of age, and for some years afterwards he, and his brother Gilbert, stuck to farming at Lochlea and at Moss-giel, but misfortune attended all their efforts.

Yet 'it was at Moss-giel,' says W. E. Henley, 'that the enormous possibilities in Burns were revealed to Burns himself; and it was at Moss-giel that he did nearly all his best and strongest work. The revelation once made, he . . . wrote masterpiece after masterpiece, with a rapidity, an assurance, a command of means, a brilliancy of effect, which make his achievement one of the most remarkable in Eng. letters.' During this period were written *The Jolly Beggars*, *Hallowe'en*, *Holy Willie's Prayer* (a classic attack on the 'Auld Lights'), *The Holy Fair*, *Scotch Drink*, *Address to the Deil*, the poems to *The Louse*,

*The Mouse*, and *The Mountain Daisy*, and many another gem of imperishable fun, satire, or song. In *The Jolly Beggars* Burns sets forth his creed:

'What is title? What is treasure?  
What is reputation's care?  
If we live a life of pleasure,  
Does it matter how or where?'

Defiance of opinion is one of the most charming themes of Burns's verse, and one of the most evil elements in his life. Meanwhile, this 'amazing peasant of genius,' whose early youth had been one of Calvinistic rigour, had begun to pay the penalty for his excesses of every kind. In 1788 he married Jean Armour, whom he had seduced. To mend his fortunes he booked a passage for Jamaica, but changed his mind, took Ellisland farm, near Dumfries, again failed, and soon after became an exciseman at Dumfries, where he tragically dissipated the remains of his unique powers. 'His death (July 21), in his thirty-seventh year,' says R. L. Stevenson, 'was indeed a kindly dispensation. It is the fashion to say that he died of drink; many a man has drunk more, and yet lived with reputation, and reached a good age. That drink and debauchery helped to destroy his constitution, and were the means of his unconscious suicide, is doubtless true; but he had failed in life, and had lost his power of work. . . . He had chosen to be Don Juan, he had grasped at temporary pleasures, and substantial happiness and solid industry had passed him by.'

Burns's first vol. of poems was

pub. at Kilmarnock in 1786. This brought him the admiration of Edinburgh society, and a profit of £20. Scott minutely describes Burns, particularly mentioning his poetic and glowing eye, his simplicity and dignity. It may be noted that, like Shakespeare, Burns borrowed from every writer he had ever read—matter, phrase, and metre. To Robert Fergusson, in particular, he owed a large debt, which he honourably acknowledged by placing a memorial stone over the grave of the young poet in Edinburgh.

The authoritative ed. of the *Poetry of Robert Burns* is that of W. E. Henley and T. F. Henderson (with Memoir), known as the 'Centenary Burns,' pub. by T. C. and E. C. Jack, Edinburgh (4 vols. 1896-7, reprinted 1901); unsurpassed study by Carlyle in the *Essays*; see also 'Some Aspects of Robert Burns,' in R. L. Stevenson's *Familiar Studies of Men and Books*.

**Burns and Scalds.** The former result from dry heat, the latter from moist heat; burns are considered under different degrees, according to severity. Danger depends mainly on the area of skin affected, and on the shock.

**Burnside, AMBROSE EVERETT** (1824-81), American soldier; invented a breech-loading rifle (1856); commander of army of the Potomac (1862); governor of Rhode Island (1866-9); Republican member of U.S. Congress (1875-81).

**Burnside, HELEN MARION** (1844- ), English artist and author; has exhibited at Royal Academy, etc.; wrote *Driftweed*, etc., and many songs for music.

**Burntisland**, royal and parl. burgh, Fifeshire, Scotland (56° 4' N., 3° 14' W.); coal exporting, shipbuilding. Pop. 5,500.

**Burr, AARON** (1756-1836), Amer. statesman, vice-president (1801-5), and leader of famous 'Burr conspiracy'; admitted to bar (1782); attorney-general of New York State (1789-91); U.S. senator (1791-7); identified himself with Democratic Republicans. Endowed with intellectual gifts of high order, and a politician of consummate ability, he was an intriguer and a profligate.

**Bur-reed**, common name for genus *Sparganium*, comprising about ten species of water-plants allied to reed-mace or cat's-tail; stems of some varieties have been used in papermaking.

**Burriana**, seapt., Spain (39° 52' N., 0° 5' W.); oranges, grain, wine, and oil. Pop. 15,200.

**Burritt, ELIHU** (1810-79), Amer. humanitarian; a blacksmith who made himself master of a great number of languages; lectured throughout America and Europe on peace and universal brotherhood. *Life* by Northend.

**Burrows, MONTAGU** (1819-1905), Brit. naval officer and Oxford prof.; saw active service against Malay pirates (1836) and at Acre (1840). While waiting for a ship, began to study at Oxford (1853), taking a first in classics and a first in the new modern history school. Appointed Chichele prof. of modern history (1862-1900). Wrote many historical works.

**Burrows, RONALD MONTAGU** (1867-1920), principal of King's Coll., London, since 1913; Gr. scholar; his pub. works include

original contributions to Greek archæology and scholarship, political studies of modern European problems. One of founders of Anglo-Hellenic League (1913), and directed its propaganda and other activities during Great War.

**Bursa and Bursitis.** Bursa is a fibrous sac containing fluid interposed between bony prominences of skin, to lessen effects of pressure or friction. Bursitis is inflammation of bursa (e.g., housemaid's knee); cured by incision and antiseptic dressings.

**Bursar.** (1) In Eng. univ. the fellow who acts as treasurer of a coll. (2) In Scotland the holder of a bursary or annual allowance, obtained usually after competitive examination; corresponds with the Eng. 'scholarship.'

**Burslem.** See STROKE-UPON-TRENT.

**Burton, SIR FREDERICK WILLIAM** (1816–1900), Irish artist in water-colours; travelled much abroad, devoting special study to the Old Masters, and was afterwards for some twenty years director of the London National Gallery; knighted in 1894.

**Burton, JOHN HILL** (1809–81), Scot. historian and advocate; wrote *History of Scotland* (1870), *Life of David Hume* (1846), *The Bookhunter* (1862), *The Scot Abroad* (1864), and other works.

**Burton, SIR RICHARD FRANCIS** (1821–90), English explorer and Orientalist; joined Indian army (1842) and applied himself to study of Oriental life and languages; made a perilous pilgrimage to Mecca (1853); explored interior of Somaliland (1854) and lake regions of equatorial Africa (1857–8); appointed Brit. consul

at Fernando Po (1861), Santos (1865), Damascus (1869), Trieste (1871); was voluminous author, and his trans. of *Arabian Nights* (pub. 1885–8) is striking testimony of his intimate knowledge of Eastern life. *Life*, by wife (1893).

**Burton, ROBERT** (1577–1640), Eng. writer; b. Leicestershire; educated at Oxford and held studentship at Christ Church till death; *The Anatomy of Melancholy* (1621), his *magnum opus*, is full of erudition and quotation.

**Burton, WILLIAM EVANS** (1804–60), Eng. actor and dramatist. One of his plays, *Ellen Wareham* (1833), achieved a great vogue in England.

**Burton, WILLIAM SHAKESPEARE** (1824–1916), Eng. artist; won gold medal of the Royal Academy with his *Samson and Delilah* (1851). Other pictures include *Cavalier and Puritan*, *The World's Gratitude*, and *Auto da Fé*.

**Burton-upon-Trent**, munic. and co. bor., Staffordshire, England (52° 48' N., 1° 39' W.); fine quality of water has made it Eng. metropolis of brewing; contains breweries of Bass, Allsopp, etc.; engineering, plaster, and cement works. Pop. 48,300.

**Buru, BULU, or BOEROE**, isl., Dutch E. Indies (3° 30' S., 126° 30' E.); mountainous but fertile; cajeput oil. Pop. c. 20,000.

**Burujird**, town (and prov.), Persia (33° 57' N., 48° 46' E.); trade in grain, opium, cottons, felts. Pop. 21,000.

**Burwood**, town, New South Wales, Australia (33° 52' S., 151° 10' E.); suburb of Sydney. Pop. 8,300.

**Bury**, mrkt. tn., Lancashire, England (53° 36' N., 2° 18' W.);



cotton spinning and weaving, also bleaching, dyeing, and print works; paper making; freestone quarries, coal mines. Pop. 59,000.

**Bury**, JOHN BAGNAL (1861—), Eng. historian; prof. modern history (1893–1902), and prof. Greek (1898–1902), Trinity Coll., Dublin; succeeded Acton as prof. of modern history at Cambridge (1902); is an authority on history of the Eastern Empire; pub. *History of Later Roman Empire* (1889), *Life of St. Patrick* (1905), *History of Freedom of Thought* (1913), *The Idea of Progress* (1920), etc. His justly-renowned ed. of Gibbon's *Decline and Fall* was pub. in 6 vols. (1896–1900).

**Burying Beetles.** See POLYMORPHA.

**Bury St. Edmunds**, mrkt. tn., Suffolk, England (52° 15' N., 0° 43' W.); named after Edmund the Martyr, in whose honour Canute founded abbey (1020); two fine Gothic churches; celebrated grammar school; agricultural implements; cattle, wool, cheese. Pop. 16,800.

**Busaco**, ridge N. of riv. Mondego, Portugal (40° 22' N., 8° 21' W.). Here Wellington defeated the French, Sept. 1810.

**Busby**, RICHARD (1606–95), Eng. schoolmaster and clergyman; educated at Westminster School, of which he became headmaster in 1639. His success as head of the famous school was very great, but he was notorious for his flogging, and it was his boast that he had birched sixteen living bishops.

**Busch**, CARL (1862—), Dan. musical composer, of Jutland; conducted concerts at Leipzig,

Dresden, and in the U.S.; his works include *Orchestral Prologue to Tennyson's 'The Passing of Arthur'*, etc.

**Busch**, JULIAN HERMANN MORITZ (1821–99), Ger. publicist — 'Bismarck's Boswell'; after extensive travels, entered government service, and from 1870 till the chancellor's death, identified himself with Prince Bismarck's life and aims; his *Bismarck, some Secret Pages of his History* (1898), excited wide interest.

**Buscourt**, vil., dep. Somme, France (49° 57' N., 2° 48' E.), on S. bk. of Somme Canal; captured by British (July 3, 1916); re-occupied by Germans (March 1918); finally taken by British during great advance (Aug. 1918).

**Bush Antelope**, or BUSH BUCK (*Tragelaphus sylvaticus*), a graceful antelope which wanders in small parties through the forests of S. Africa.

**Bushey**, village, Hertfordshire, England (51° 38' N., 0° 22' W.); art school founded by Sir Hubert Herkomer (1882). Pop. 7,000.

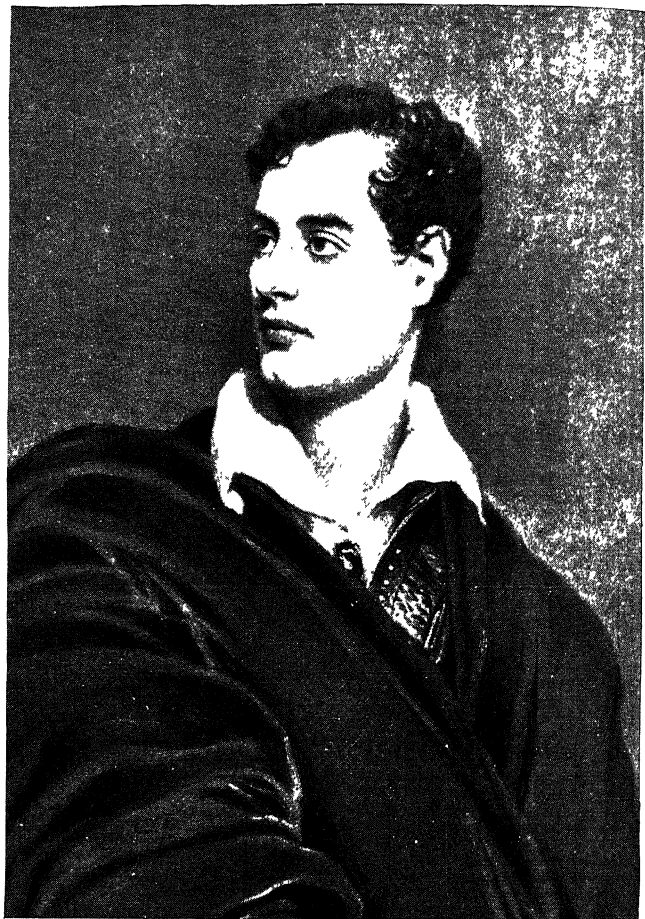
**Bushido**, the ethical code of the Samurai of feudal Japan.

**Bushire**, or BANDER BUSHIRE, properly ABU-SHEHR, seapt., Persian Gulf (28° 59' N., 50° 49' E.), on sandy peninsula; exports opium, mother-of-pearl, carpets; imports Manchester goods, sugar, tea, iron; land terminus Indo-European telegraph line; occupied by British during Persian War (1856–7). Pop. 20,000.

**Bushman**, S. African aborigine, approaching extinction; short of stature, complexion of a dirty yellow; the skin hard and dry, and with little body-hair; while the males are slim



ROBERT BURNS.  
(Painted by Alexander Nasmyth · 1787-8.)  
(The National Gallery of Scotland )



LORD BYRON.

*(After the portrait by T. Phillips, R.A.)*

almost to emaciation, there is much steatopygy amongst the women. The only dress of the men is a strip of skin about the loins. They are great hunters, and very swift of foot. Their food consists of the half-cooked flesh of wild animals, insects, honey, and roots. They are also inveterate smokers. By nature they are savage and fearless, nomadic in their habits, gifted with considerable intelligence, and possessing ability in drawing and music. Their rock pictures give evidence of much artistic taste and skill, and are correct in perspective. When civilized they prove very reliable.

Stow, *Native Races of S. Africa*.

**Bushrangers**, name given to brigands who infested outlying settlements of Australia during first three-quarters of 19th cent., largely recruited from escaped convicts and lawless element attracted by gold diggings. An excellent idea of the type is given in Rolf Boldrewood's *Robbery under Arms*.

**Bush-shrike**, or **ANT-SHRIKE**, bird belonging to sub-family of S. Amer. Formicariidæ; frequents dense cover, feeds on ants, etc., and has certain ventriloquial powers of voice.

**Busiris**. (1) Gr. name for Tettu, city of Egyptian god Osiris; the modern Abusir. (2) Mythical king of Egypt, who offered up foreigners as sacrifice to avert famine; was slain by Heracles, whom he tried in vain to immolate.

**Busk**, GEORGE (1807-86), Eng. surgeon, zoologist, anthropologist, and palæontologist; Hunterian prof. of comparative anat.

and physiology (1856), Royal Coll. of Surgeons; president Royal Coll. of Surgeons (1871); pub. *Report on Polyzoa collected by H.M.S. 'Challenger'* (1884-6).

**Busk**, HANS (1815-82), Eng. lawyer; organizer of army volunteer system, and author of *Navies of the World* (1859).

**Busk**, RACHEL HARIETTE (1831-1907), writer on folk-lore, daughter of Hans Busk; collected thousands of legends and songs from peasants of Italy, Spain, and Austria; author of *Folk Songs of Italy, Patrañas*, etc.

**Busken-Huet**, CONRAD (1826-86), Dutch author and critic; wrote *Lidewijde*, a novel, and several series of criticisms pub. under the title of *Literary Fantasies. Correspondence*, pub. posthumously, increased reputation.

**Buskerud**, amt (co.), Norway (60° 30' N., 8° 45' E.); forested mts.; cap. Drammen. Area, 5,769 sq. m.; pop. 123,600.

**Buslaev**, FEDOR IVANOVICH (1818-98), Russian philologist; prof. of Russian literature, Moscow Univ.; wrote many valuable works, chiefly on history and development of Slavonic languages—e.g., *On the Teaching of the National Language*, etc.

**Busra**. See BASRA.

**Buss**, FRANCES MARY (1827-94), Eng. educationist; head of the North London Collegiate School for Ladies; was of a magnetic personality, and famed as a pioneer of reformed education for girls and women.

**Bussa**. See BOUSSA.

**Bussche-Haddenhausen**, BORO VON DEM (1867- ), Ger. diplomatist; he was attached to the embassies at Cairo, London,

Washington, etc., and on outbreak of Great War was transferred to Bukharest, where he worked hard to prevent Rumania's entry into the war.

**Bust.** See SCULPTURE.

**Bustard** (*Otis*), genus of land-fowl, numerous species of which are distributed in the Old World, and one in Australia. *O. tarda* was formerly common in Great Britain, and has been preserved as a game bird, but the native race became exterminated in the middle of the 19th cent. Occasionally some find their way to S.E. England from the Continent. The finely plumed adult male measures about 8 ft. between the tips of the wings; the female is smaller.

**Busto Arsizio**, town, Milan, Italy (45° 36' N., 8° 52' E.); church (1517–22) was designed by Bramante; cotton manufactures. Pop. (comm.) 20,000.

**Butcher**, SAMUEL HENRY (1850–1910), Brit. class. scholar; prof. of Greek, Edinburgh Univ. (1882–1903); M.P. for Cambridge Univ. (1904–10); elected president of Brit. Academy of Letters (1909); pub. (with Andrew Lang) *Prose Translation of the Odyssey*, and wrote on Demosthenes, Aristotle, and Gr. subjects in general.

**Butcher-bird**, popular name applied to more than one species of shrike family (Laniidæ), in this country particularly to red-backed SHRIKE.

**Butcher's Broom**, common name for *Ruscus*, peculiar shrub of family Liliaceæ; genus consists of three or four species, native in Europe, the Eng. variety (*Ruscus aculeatus*) being known as knee holly; fruit, bright red berry.

**Bute**, island, Firth of Clyde,

Scotland (55° 50' N., 5° 12' W.); separated from Argyllshire by KYLES OF BUTE; coast rocky, numerous bays; undulating interior; highest alt. Kames Hill, 875 ft.; several small lochs—principal, Loch Fad; excellent crops; fisheries; quarries; has salubrious climate; chief tn. Rothesay. Pop. 12,000.

The co. of BUTESHIRE comprises islands of Bute, Arran, the Cumbræ, Holy Isle, Pladda, Inchmarnock. Area, 218 sq. m. (139,658 ac.); pop. 18,200.

**Bute**, JOHN STUART, 3RD EARL OF (1713–92), Brit. prime minister; succeeded to earldom (1723); gained the favour of Frederick, Prince of Wales (1747), and after Frederick's death (1751) obtained great influence over young prince, on whose accession as George III. (1760) he rose to power. In March 1761 he became secretary of state, and in Nov. prime minister. His nationality, character as a favourite, advocacy of royal supremacy, and peace policy, made him very unpopular; he resigned (April 8, 1763), and withdrew from court (Sept.). Of dilettante temperament, and inexperienced in politics, his weak ministry was marked by gross corruption and intimidation.

**Butea**, genus of four or five climbing shrubs (family Leguminosæ), allied to scarlet runner, native in India and China; one variety yields a juice used in precipitating indigo.

**Buteo**. See BUZZARD; HAWK FAMILY.

**Butler**, tn. (and co.), Pennsylvania, U.S. (40° 55' N., 79° 52' W.); oil and natural gas; glass, steel, flour. Pop. 20,200.

**Butler, ARTHUR JOHN** (1844-1910), Eng. man of letters; prof. of Ital. language and literature, Univ. Coll., London; pub. *Dante: his Times and his Work* (1901).

**Butler, BENJAMIN FRANKLIN** (1818-93), Amer. administrator, soldier, and lawyer; admitted to Massachusetts bar (1840); delegate to Democratic national conventions (1848-60); member of Massachusetts House of Representatives (1853), of state senate (1859), and a Republican representative in Congress (1867-74, 1876-9); elected governor of Massachusetts (1882).

**Butler, CHARLES** (1750-1832), English legal and miscellaneous writer; pub. some fifty works, including *Horæ Biblicæ* (1797), *Horæ Juridicæ Subsecivæ* (1804), *Book of the Roman Catholic Church*.

**Butler, GEORGE** (1774-1853), master of Harrow and dean of Peterborough; was father of George Butler (1819-90), principal of Liverpool Coll. and writer on theological subjects, and of Henry Montagu Butler (1833-1918), master of Trinity Coll., Cambridge, from 1886, and chaplain-in-ordinary to the king from 1912.

**Butler, JOSEPH** (1692-1752), Anglican theologian; graduate of Oriel Coll., Oxford, and preacher at Rolls Chapel; prebendary of Rochester (1733); clerk of the court to Queen Caroline (1736); Bishop of Bristol and Dean of St. Paul's (1738); Bishop of Durham (1750); fame rests on his *Analogy of Religion* (pub. 1736), and his *Sermons* (in Rolls Chapel), in both of which he combated the Hobbes school of thought and the Deism of his day. Butler's

*Analogy* is regarded as one of the greatest intellectual achievements of Anglicanism; his monument in Bristol Cathedral has an inscription by Southey.

**Butler, MRS. JOSEPHINE ELIZABETH** (1828-1907), Eng. author, wife of George Butler, canon of Winchester; a leader in women's movements, such as rescue, higher education, Married Women's Property Act, etc.; pub. *The Hour before the Dawn*, *Government by Police*, etc.

**Butler, SAMUEL** (1612-80), Eng. satirical poet; son of a small Worcestershire farmer; educated at King's School, Worcester; became a justice's clerk, and was subsequently in the service of the Countess of Kent, John Selden, Sir Samuel Luke, the Earl of Carbery, and the Duke of Buckingham. During these various secretarial occupations he had unique opportunities of observing men and manners, and it is this wide knowledge of life which makes his famous doggerel satire, *Hudibras* (a burlesqued knight), so lastingly attractive. The first part of the poem was pub. in 1663, the second in 1664, and the third part in 1678. It consists of some ten thousand verses, and though perhaps little read now, its witty passages have become merged in everyday language; it contains such well-known couplets as—

'Compound for sins they are inclined to  
By damning those they have no mind to.'

'What makes all doctrines plain and clear?

About two hundred pounds a year.  
And that which was proved true before  
Prove false again? Two hundred more.'

Butler is said to have been neglected by the court, and died in comparative poverty.

**Butler, SAMUEL** (1774–1839), Eng. ecclesiastic and scholar; as head master raised Shrewsbury School to a high state of efficiency; appointed Bishop of Lichfield (1836); ed. works of Æschylus, and pub. a *Sketch of Modern and Ancient Geography* (1813).

**Butler, SAMUEL** (1835–1902), Eng. essayist, satirist, and miscellaneous writer; grandson of the above, whose *Life* he wrote; made a competence in New Zealand, and used his experience of colonial life in *Erewhon* (Nowhere) (1872). His other writings include works on Shakespeare's sonnets, the authorship of the *Odyssey*, which he contended was written by a woman, and a novel (posthumously published), *The Way of All Flesh*. An artist and musician, he exhibited at the Royal Academy, and composed oratorios.

**Butler, SIR WILLIAM FRANCIS** (1838–1911), Brit. soldier and traveller; served in Red River Expedition (1870–1), Ashanti (1873–4), Zulu War, and Egyptian and Sudan campaigns; commander-in-chief in S. Africa (1898); author of *The Great Lone Land* (1872) and other works. **LADY BUTLER** (née Elizabeth Thompson) has painted many famous battle-pictures, among the most popular of which are *The Roll Call*, *The Dawn of Waterloo*.

**Butler, WILLIAM ARCHER** (1814–48), Irish clergyman and author; wrote *Lectures on the History of Anc. Philosophy* (1856); and his *Sermons* (1849) are remarkable for their brilliant style.

**Buto**, name given by the Greeks to the Egyptian snake-goddess Uto, who is generally represented as a serpent, sometimes winged, and wearing the crown of Lower Egypt.

**Butomus**, genus of a single species (*B. umbellatus*), one of the handsomest of water plants, found in temperate parts of Europe and Asia; commonly known as flowering rush.

**Butt, Dame CLARA** (1873– ), Eng. contralto; made her début at performance of *Orfeo*, Lyceum Theatre, London (1892); sang at Handel Festival (1894); has since figured prominently at Brit. festivals, and at oratorio and ballad concerts. In 1900 married Kennerley Rumford, the singer. During Great War, as result of her own concerts, over £70,000 was distributed among various war charities; cr. Dame of British Empire (1920).

**Butt, ISAAC** (1813–79), Irish Nationalist leader; was perhaps the most prominent lawyer of his day, and was engaged in all the leading cases bearing upon Irish affairs; entering Parliament, his abilities soon raised him to the front rank amongst the Irish Protestants, and he inaugurated at Dublin (1870) and was chosen leader of the Home Rule agitation.

**Butte**, largest city, Montana, U.S. (46° 2' N., 112° 33' W.); important gold, silver, and copper mining centre; produces one-seventh of the world's copper. Pop. 39,000.

**Butter**, preparation made from fatty constituents of milk, which is either allowed to stand till cream comes to surface, or 'separated' artificially; fatty

particles made to coalesce by churning. 'Fresh' butter contains more water and less fat than kind to which much salt has been added; chief butter-exporting countries, Denmark and Australia. See DAIRYING.

**Butter-bur** (*Petasites*), a genus of herbs of order Compositæ, closely allied to coltsfoot; three species native, or established, in this country and found in damp places, in marshy meadows, and on river banks.

**Buttercup**, common name of various yellow-flowered species of genus *Ranunculus*, from colour and shape of flowers.

**Butterfield**, WILLIAM (1814-1900), Eng. architect; did much to revive Gothic arch.; designed St. Augustine's Coll., Canterbury; Keble Coll., Oxford, etc.

**Butter-fishes**. See BLENNIES.

**Butterflies**. See LEPIDOPTERA.

**Butterfly Fishes** (Chaetodontidae), small, flattened bony fishes with diverse brilliant and beautiful coloration; common about shore rocks and coral reefs in tropical and sub-tropical seas.

**Butterfly Orchis**, popular name of two Brit. species of *Habenaria*, viz., *H. chlorantha*, the large, and *H. bifolia*, the small, butterfly orchis; common on moist heaths or wood borders.

**Butterfly Weed**, name for *Asclepias tuberosa*, N. Amer. plant, known also as 'pleurisy root'; popular remedy in U.S. for many ills.

**Butternut**. (1) Seed of tree found in Brit. Guiana; kernel has pleasant taste and is rich in oil; trees are related to tea shrubs. (2) The more general use of name is for tree of walnut

group, *Juglans cinerea*, native of N. America; the wood is dark yellow and takes on fine polish; seeds abound in oil.

**Butter Tree**, a general name for trees of order Sapotaceæ, seeds of which yield oily fat or 'butter,' used by natives of India and Africa for making soap, candles, etc. See BASSIA.

**Butterwort**, name of four Brit. species of *Pinguicula*, a genus of insectivorous herbs of order Lentibulariaceæ; *P. vulgaris*, the common butterwort, grows in bogs and on heaths; a rosette of leaves rises from a rhizome; these are covered with glands, some stalked, and secreting a sticky fluid which imprisons small insects; the leaf curls up and other glands pour out digestive juices; in this way a nitrogen supply is obtained.

**Buttevant**, tn., Cork, Ireland (52° 14' N., 8° 40' W.); the Mulla of Edmund Spenser; his castle, Kilcolman, is some 3 m. to N.E. Pop. 2,800.

**Buttress**. See ARCHITECTURE.

**Buturlinovka**, or PETROVSKOI, tn., Voronej, Russia (50° 50' N., 41° E.); tanneries. Pop. 38,000.

**Butyl Alcohols**, four organic compounds of the same composition ( $C_4H_9OH$ ) but different properties; *isobutyl alcohol* is a liquid (b.p. 108° C., sp. gr. .817 at 0° C.); smells like fusel oil, in which it occurs.

**Butyric Acid** ( $C_4H_8O_2$ ), an organic acid contained in butter, with a powerful and unpleasant smell, which is noticed when butter becomes rancid, as the butyric acid then separates from its union with glycerine; b.p. 163° C.; sp. gr. 0.975. This is



normal butyric acid ( $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ ).—*Isobutyric acid* ( $\text{CH}_3\text{CH}_2\text{CH}(\text{COOH})$ ), b.p.  $155^\circ\text{C}$ .; sp. gr. 0.97.

**Butyric Ether** (*Ethyl Butyrate* ( $\text{C}_3\text{H}_7\text{CO}_2\text{C}_2\text{H}_5$ ), or **PINE-APPLE OIL**, like most esters, has a fruity odour, and is used as a substitute for natural pine-apple essence (the flavour of which is probably due to natural butyric ether) in sweets.

**Butyrospermum**, genus of trees of order Sapotaceæ; two species found only in tropical Africa; dried seed kernels contain about 50 per cent. of solid fat, known as shea butter, used as food and as burning oil by natives; kernels shipped from Nigeria; of 10,000 tons exported in 1915, two-thirds went to Britain and other third to U.S.; used for making candles and soap as well as butter substitutes.

**Buxar.** See **BAXAR**.

**Buxton**, tn., Peak dist., Derbyshire, England ( $53^\circ 15' \text{N}$ .,  $1^\circ 55' \text{W}$ .); near head of Wye valley; celebrated mineral springs and natural hot baths; chief building, 'The Crescent,' erected by Duke of Devonshire (1780); Devonshire Hospital for poor patients; numerous hydropathics and fine gardens. Pop. 14,400.

**Buxton**, SYDNEY CHARLES, 1st VISCOUNT OF NEWTIMBER, (1853– ), Eng. Liberal statesman; under-secretary for colonies (1892–5); introduced penny postage to U.S. and Canadian magazine post; postmaster-general (1905–10); president Board of Trade (1910–14); high commissioner and gov.-gen. of S. Africa (1914–20); is author of *Finance and Politics: an Historical Study, 1783–1885*, Mr.

Gladstone as Chancellor of the Exchequer, etc.

**Buxton**, SIR THOMAS FOWELL (1786–1845), English brewer and philanthropist; married to Hannah, sister of Elizabeth Fry; became partner in the firm of Truman, Hanbury, and Co., London brewers; M.P. for Weymouth (1818–37); devoted himself to prison reform and the abolition of slavery in the Brit. colonies, the latter of which he saw pass into law in 1833.

**Buxtorf**, JOHANNES (1564–1629), Ger. scholar, most learned of his time; author of *Manuale Hebraicum et Chaldaicum* (1602), *Synagoga Judaica* (1603), and similar works.

**Buys-Ballot**, CHRISTOPH HEINRICH DIEDRICH (1817–90), Dutch meteorologist; he enunciated (1857) *Buys-Ballot's law* dealing with the relation of wind direction to barometric pressure; formula: in the northern hemisphere, if you stand with your back to the wind, pressure is lower on your left hand than on your right, while in the southern hemisphere the reverse holds. See **CYCLONE**.

**Buzancy**, vil., dep. Aisne, France ( $49^\circ 18' \text{N}$ .,  $3^\circ 22' \text{E}$ .), 5 m. s. by E. of Soissons; famous for the attack made by the 15th (Scottish) Division, operating with General Mangin's Fr. army (July 28, 1918). A memorial erected by the French on the battlefield in commemoration of their valour bears the inscription: 'Here the noble thistle of Scotland will flourish for ever among the roses of France.'

**Buzeu**, or **BUZAU**, tn., Rumania ( $45^\circ 9' \text{N}$ .,  $26^\circ 50' \text{E}$ .),

on riv. of same name, 60 m. N.E. of Bukharest; important ry. centre and market for grain, timber, and petroleum; occupied by the Germans (Dec. 17, 1916) in their invasion of Rumania (see RUMANIA). Pop. 22,000.

**Buzuluk**, tn., Samara, Russia (52° 48' N., 52° 16' E.); live stock and grain; copper foundries and tanning. Pop. 15,000.

**Buzzard**, group of birds of prey distinguished from eagles in having a relatively shorter head and a straighter beak. The common buzzard, *Buteo vulgaris*, used to be well known in England, and the rough-legged buzzard (*Archibuteo lagopus*) occasionally visits the country in winter.

**B.V.M.** (Lat. *Beata Virgo Maria*), Blessed Virgin Mary.

**B.W.G.**, Birmingham Wire Gauge. See WIRE.

**B.W.T.A.**, British Women's Temperance Association.

**By**, JOHN (1781-1836), English soldier and engineer; served in Peninsular War (1811); constructed Rideau Canal (126½ m. in length) between St. Lawrence and Great Lakes (1827-32); his camp, Bytown, renamed OTTAWA, became cap. of Canada (1858).

**Byblos**, anc. Phœnician tn. and seapt., N. of Beirut (34° 8' N., 35° 38' E.), between Berytus and Tripolis; the headquarters of the cult of the Syrian Adonis.

**Byelaya** (TSERKOV), tn., Kiev, Ukraina (49° 46' N., 30° 16' E.); commercial centre, machinery, corn. Pop. 60,500.

**Byelgorod**, tn., Kursk, Russia (50° 33' N., 36° 33' E.); candles, leather. Pop. 23,000.

**Byelostok**. See BIELOSTOK.

**Byeltoý**, tn., Bessarabia, Ru-

mania (47° 46' N., 27° 56' E.); centre of important cattle and horse trade. Pop. 23,600.

**Byers**, SIR JOHN WILLIAMS (1853- ), prof. midwifery and children's diseases, Queen's Univ., Belfast; knighted (1906); author of *Public Health Problems, Tuberculosis in Ireland*, etc.

**Byker**, eccles. par., Northumberland, England (54° 58' N., 1° 37' W.); in co. bor. of Newcastle; lead, chemicals, glass, pottery. Pop. 70,600.

**By-laws**. Originally the word by-law meant a law made by the local authority for the regulation of a town. It now means any law, rule, or regulation affecting the public, made by any corporation, or company, in pursuance of powers conferred by Act of Parliament. These by-laws must not contravene the law of the land, and in making them the corporation, or company, must not exceed the powers conferred by Parliament.

**Byng**, GEORGE. See TORRINGTON, VISCOUNT.

**Byng**, JOHN (1704-57), British admiral; sent to relieve Minorca, which the French had attacked, he withdrew without fighting a battle; in consequence, Fort St. Philip surrendered; Byng was tried and shot (March 14, 1757), as Voltaire said, 'pour encourager les autres.'

**Byng**, JULIAN, 1ST BARON BYNG OF VIMY (1862- ), British soldier, seventh son of second Earl of Strafford, joined the 10th Hussars and served in Sudan expedition (1884) and the S. African War (1899-1902). In Great War commanded 3rd Cavalry Division, accompany-

ing Rawlinson's 7th Division in Flanders; in May 1915 succeeded Allenby in command of Cavalry Corps; in Aug. 1915 proceeded to Gallipoli to command 9th Corps (Suvla Bay); in Feb. 1916 returned to France to command 17th Corps. In May 1916 he was transferred to the Canadian Corps ('Byng Boys'), which he led at the Somme and at the famous capture of the Vimy Ridge (April 9, 1917). He succeeded Allenby in command of the 3rd Army, which gained striking but ephemeral success before Cambrai (Nov. 1917), stopped the Ger. onset on Arras (March 1918), and played a prominent part in the final Allied offensive. In Aug. 1919 he was created a baron and voted grant of £30,000. Subsequently he retired from the army, and became chairman of the United Services Fund.

**By-products**, secondary products produced in the course of manufacturing a principal product. The utilization of by-products, formerly allowed to run to waste, is essentially a modern development, and in certain industries by-products now form the main source of profit. The importance of by-products dates from the artificial production of aniline colouring matter from coal tar by the Eng. chemist Perkin in 1856. Other examples of profitable by-products are: industrial alcohol made from waste sulphite liquor in manufacturing paper from wood; tar and ammoniacal liquor got by distilling coal for illuminating gas. Besides dyes, many valuable drugs and flavouring and

sweetening agents are obtained from coal tar products; tar, ammonia, and potash are recovered from blast furnaces smelting iron ores, while the slag is useful for paving, cement, and road metal; basic slag, a by-product in steel manufacture, is a valuable manure. Glycerine is a valuable by-product of soap and candle works.

**Byrd, WILLIAM** (1543-1623), Eng. composer; shared with Tallis the post of organist to the Chapel Royal; composed masses, part-songs, madrigals, etc., and his work takes high rank in the literature of music. A number of his compositions have been pub. in recent times, but much of his work still remains in manuscript.

**Byrom, JOHN** (1692-1763), Eng. poet and stenographer; b. Kersal Cell, Manchester, where his famous hymn, 'Christians, awake,' was written. He was a fellow of Trinity Coll., Cambridge; F.R.S. (1724); and besides writing numerous poems and hymns was the inventor of a system of shorthand. He was a devoted adherent of the Pretender. His *Journals and Remains* have been pub. by the Chetham Society.

**Byron, GEORGE GORDON, 6TH LORD** (1788-1824), Eng. poet; b. in London. He came of an old Derbyshire family, notorious for its stormy history. His great-uncle and predecessor in the title ('the wicked Lord Byron') was tried by the peers in 1765 for the murder of Mr. Chaworth, but found guilty of manslaughter only; and his grandfather, Admiral Byron ('Foul-Weather Jack'), sailed round the world with Anson. His father was a

dissolute scamp who married (as his second wife) Catherine Gordon of Gight, a small Scot. heiress, and squandered all her fortune. After his father's death in 1791, Byron lived with his mother (a violent, foolish woman, who made him exceedingly unhappy), chiefly in Aberdeen. He received his education first at Harrow and then at Trinity Coll., Cambridge, where he made the acquaintance of Hobhouse, afterwards Lord Broughton, and led a very riotous life. About this time he fell in love with Mary Chaworth, the heiress of his great-uncle's victim, and was rejected by her—a disappointment that had some bearing on his subsequent life.

In 1807 he published *Hours of Idleness*, which was 'cut up' by Brougham in the *Edinburgh Review*. In retaliation Byron wrote in 1809 his satirical poem, *English Bards and Scotch Reviewers*, and then set out on his tour through Europe, including in his travels Spain, Portugal, Greece, and the Ægean Islands. On his return he issued (in 1812) the first two cantos of *Childe Harold*, describing his travels, and 'found himself famous.' For the next few years he was the darling of London society, contracting numerous liaisons with married women (notably Lady Caroline Lamb, wife of Lord Melbourne) and publishing his Oriental poems, *The Giaour* (1813), *The Corsair* and *Lara* (1814), and *The Siege of Corinth* (1816). In Jan. 1815 he married Miss Milbanke, an heiress; in Dec. of the same year his daughter, Ada, was born, and his wife left his house. The reasons of this separation are not

known. Being cast off by society, Byron went abroad and settled near Geneva, where he met and came under the influence of Shelley, and formed an intimacy with Mrs. Shelley's step-sister, Claire Clairmont, who became the mother of Allegra Byron. At Geneva he wrote the fine Wordsworthian canto iii. of *Childe Harold*, *The Prisoner of Chillon*, and began *Manfred*. From Geneva he went to Milan, thence to Venice, where he spent two years of ceaseless dissipation, and wrote *Mazeppa*, and the first two cantos of *Don Juan*, his masterpiece.

From his life in Venice he was rescued in 1819 by the Countess Guiccioli, with whom he lived for the next four years at Ravenna, Pisa, and Genoa. During this time he continued *Don Juan* and wrote his plays, *Marino Faliero* (1820), *The Two Foscari*, and *Cain* (1821), and his burlesque of Southey, *The Vision of Judgment* (1821). At the instigation of Shelley (whom he met again in Pisa), in 1822 he entered into partnership with Leigh Hunt in editing *The Liberal*, which was, however, a failure. After Shelley's death, he raised money for the Gr. insurrectionists, and sailed to Missolonghi, where he died of fever (April 19, 1824). Byron's poetry has lately suffered undue eclipse; his earlier poems are garish and insincere, and his style is always slipshod, but his later poems show not only sympathy with the stormy side of nature, but also great powers of wit and satire. His *Don Juan* is not only the cleverest satirical poem in English literature, but also one

of the most ingenious displays of rhyming in the language.

*The Poetical Works of Lord Byron*, with Memoir by E. H. Coleridge (1905); *Letters and Journals of Lord Byron*, ed. by Thomas Moore.

**Byron**, HENRY JAMES (1834–84), Eng. dramatist and actor; first ed. of *Fun*; wrote numerous comedies and extravaganzas, and achieved remarkable success with *Our Boys*, which had a run of over four years at the Vaudeville Theatre (Jan. 1875–April 1879). Another popular success was *The Upper Crust*, written for J. L. Toole. His best work was *Cyril's Success* (1868).

**Byron**, HON. JOHN (1723–86), Eng. vice-admiral; second son of fourth Baron Byron; grandfather of poet; sailed round the world with Anson; the elements were generally unfavourable to his naval engagements, and he gained the sobriquet of 'Foul-Weather Jack'; governor of Newfoundland (1769).

**Byrsonima**, genus of evergreen trees and shrubs of order Malpighiaceæ, relatives of our Geranium family, and natives of tropical America; bark of certain species used for tanning.

**Byssus**. See under LAMELLIBRANCHIATA.

**Bytown**, former name of OTTAWA.

**Bywonner**, in S. Africa, an occupier of farm lands paying rent in kind or service, or in both.

**Byzantine Architecture**. See ARCHITECTURE.

**Byzantine Empire**, EASTERN EMPIRE, LOWER (OR LATER) ROMAN EMPIRE. The Byzantine Empire was founded by CON-

STANTINE THE GREAT, who in A.D. 326 moved his capital to BYZANTIUM, henceforth called CONSTANTINOPLE. The double change which had fallen upon the Roman Empire was marked by the city's dedication in 330 by Christian bishops to the Virgin Mary. The pagan mistress of the world had become a Christian state and was to develop into a merely Eastern power. It remained the bulwark of civilization throughout the Dark and Middle Ages, and then the Italianate-Greek city, in its turn overrun by barbarian conquerors, became the parent of the Renaissance.

The formal foundation of the Eastern Empire took place in A.D. 395, when Theodosius the Great at his death permanently divided the empire between his sons, Arcadius and Honorius. To Arcadius fell the Asiatic portion, together with Egypt, Thrace, Mœsia, Macedonia, and Greece. The Eastern Empire successfully repelled Teutonic attacks (the Goths being massacred and expelled by the populace at Constantinople, 401), and became an object of great reverence to the new Teutonic kingdoms. It served, until its fall, the purpose of a European outpost against Asiatic invasions.

The Emperor JUSTINIAN (ruled 527–65), lawgiver and builder of Santa Sophia, with the aid of his generals Belisarius and Narses, reconquered some western provinces, including Rome; his court exhibited Alexandrian splendour and vice; his wars and extravagance brought about the decline of 7th cent., when Italy was re-



captured by Lombards, Slavs, and Bulgarians settled in Balkan peninsula, Avars captured Dacia, Pannonia, etc. Persians attacked Syria, sacked Jerusalem (614) and assaulted Constantinople; and after defeat of Persians, Saracens conquered Egypt and Syria and threatened Asia Minor. Territory was permanently reduced; civilization decayed.

LEO THE ISAURIAN (717-40) by a series of victories fatally weakened the Saracens. The Macedonian dynasty (867 to 1056) ruled the empire in its last great age; the Saracens became a negligible power; Constantinople became the trading centre of the world; Bulgaria became a Christian, dependent state, Basil II., 'Slayer of the Bulgarians,' reducing it (1018); Russia became Christian ally. The empire steadily declined after the Macedonian rule; the Seljukian Turks under Alp Arslan won the great battle of Manzikert (1071), taking Emperor Romanus IV. prisoner, and founded Turk. kingdom of Rûm. The appeal of Emperor Alexius Comnenus I. (1081-1118) to the Christian princes for aid against the Turks brought about the First Crusade. The greed and self-seeking of the Crusaders ultimately caused the Byzantine Empire's fall.

The empire had also to face Christian aggression in Italy; with the aid of Venice the Normans were for some time kept in check, but ultimately founded a state in southern Italy and Sicily. The reign of Isaac Angelus, one of the last Comnenians, proved fatal to the empire. Bulgaria successfully revolted against his

taxation; he was temporarily deposed; and in 1204 Venice diverted the Fourth Crusade against Constantinople; the capital was sacked, and the empire dismembered by the Crusaders.

The Greeks for some time elected a titular emperor, and in 1261 the Emperor Michael Paleologus captured Constantinople, but with difficulty maintained his position. The empire finally fell before the attack of Ottoman Turks, who captured Philadelphia (1393) and overran Bulgaria. After some delay Constantinople was besieged (1422). Europe in terror sought to assemble a crusading army, but the sole aid against the infidel was given by Hungary. In 1453 a new and final siege commenced. Constantine XI. died fighting, and on the following day the city was stormed. The combined attack of East and West had at length proved fatal, and the capital of Greek Christendom finally passed into infidel possession.

The Roman emperor of the East retained much of the power of the *pontifex maximus*, presiding at eccles. councils, ratifying and making canon law. The patriarch, nominal head of the Church, usually proved obedient. Until the loss of the West the see of Constantinople was subordinate to that of Rome, but the former soon became independent and took differing course on many doctrines. The Gr. patriarch was excommunicated by Pope Leo IX. (1054), and the schism which thus began has never been more than temporarily healed.

Gibbon, *Decline and Fall of the Roman Empire*; Bury, *History of*

*the Later Roman Empire* (1889, 2 vols.); Oman, *The Byzantine Empire* (1892); Pears, *Destruction of the Greek Empire* (1904); Foord, *Byzantine Empire* (1911).

**Byzantium**, town, on site of modern Constantinople ( $41^{\circ} 2' \text{ N.}$ ,  $28^{\circ} 58' \text{ E.}$ ), at entrance to Bosphorus; founded in 667 B.C. by Gr. colonists from Megara; taken by Persians (515 B.C.); some time under control of Athens (5th cent. B.C.); independent from 4th cent.; destroyed by Severus (A.D. 196); rebuilt as CONSTANTINOPLE (A.D. 330).

**Bzura**, riv., Poland ( $51^{\circ} 51' - 52^{\circ} 23' \text{ N.}$ ,  $19^{\circ} 33' - 20^{\circ} 14' \text{ E.}$ ), trib. Vistula, flows in westerly direction N. of Lodz, then proceeds E. to Lowicz, afterwards turning N. to the Vistula, which it enters opposite Vyzogrod, 40 m. N.W. of Warsaw. In the Great War the Russians held the line of the lower Bzura, continued by its trib. the Rawka, against the Ger. assaults on Warsaw (Nov.-Dec. 1914, and Jan.-Feb. 1915), but withdrew practically without fighting in their great retreat in the latter half of 1915.



## C

**C**, third letter of the Latin alphabet; C and G one letter up to 3rd cent. B.C., with original value *g*; after G came into use, C left with value *k*. In alphabets derived from Latin, C has acquired a number of different sounds, such as *tsh*, *ts*, *sh*, *s*. In English has sound of *s* before *e*, *i*, and *y*; other English sounds are *z* and *sh*. *Ch* expresses various sounds originating in *c=k*. Modern French value appears in English *machine*. C, in music, is tonic of the 'natural' scale. Key of C minor flattens E and A. In Morse Code, C is thus represented: — . — .

**C.**, cent; Centigrade; centime; (Lat. *circa*) about; 100.

**C.A.**, Chartered Accountant.

**Caa'ing Whale.** See CA'ING WHALE.

**Cab** (from Fr. *cabriolet*), a two- or four-wheeled vehicle used in France as early as the 17th cent.; first introduced into England about 1820. Originally this kind of carriage was a high, two-wheeled gig, with movable hood, accommodating two persons. A later development of the vehicle was the HANSOM, patented by an architect named Hansom, in 1834. Four-wheeled cabs, or *growlers*, first came into use in England about 1836; taxi-cabs in 1897, which then failed to pay, but are now rapidly superseding every other form of conveyance.

**Cabal**, intrigue; secret understanding between members of a clique, and by transference denoting the clique itself. Cabal of Charles II.'s reign specifically so called, and term considered peculiarly appropriate, because initials of names of noblemen composing it (Clifford, Arlington, Buckingham, Ashley, and Lauderdale) formed the anagram *Cabal*.

**Caballero**, FERNAN (1796-1877), Span. novelist; pseudonym of Cecilia Francisca Larrea, author of numerous historical and other stories which achieved great popularity. Her most famous work, *La Gaviota* (1849), was trans. into most European languages.

**Cabatuan**, tn., Panay I., Philippines (10° 52' N., 120° 28' E.); exports rice. Pop. c. 18,000.

**Cabbage**, vegetable; the wild cabbage (*Brassica oleracea*), native to Britain, is the ancestral species of all cultivated varieties of cabbages, Brussels sprouts, broccoli, cauliflower, and savoy; thrives in deeply-dug, well-manured clay or loam soil, which should be rolled before planting and frequently stirred and hoed afterwards. For succession they are sown Jan. (in frames), March (in open), for summer and autumn use; and again June, July, Aug., for winter and following spring and summer; they are planted when about 3 in. tall, 1. to 2 ft.

apart each way. Enemies include: club, or 'finger-and-toe,' caused by maggot of cabbage weevil—remedied by deep digging, stirring of soil, liming; caterpillars of cabbage butterfly—removed by hand-picking; slugs—by trapping.

**Cabbage Butterfly**, common large white garden butterfly; lays eggs on under surface of cabbage leaves, which remain about a fortnight before hatching; larvæ very voracious.

**Cabbage Fly** (*Anthomyia brassicæ*), dipterous insect similar in appearance to common house fly; lays eggs beneath skin of root-stems of cabbages and allied plants, and larvæ eat their way through roots and stems.

**Cabbage Moth** (*Mamestra brassicæ*), nocturnal moth of Noctuidæ family; larvæ very destructive to heart of cabbage.

**Cabbage Palm** (*Oreodoxa oleacea*), lofty palm of W. Indies; head, a huge terminal bud, used as vegetable. Fruit yields an oil, and stem a sort of sago.

**Cabbage Tree** (*Cordyline australis*), woody plant of Lily family found in New Zealand; old specimens 15 ft.—40 ft. high; furnishes strong, durable fibre, very resistant to water, and used for rope making; leaves recommended for paper making.

**Cabbala**. See KABBALA.

**Caber-tossing**, Scot. athletic sport, consisting in throwing the trunk of a tree, about 20 ft. long, so that it falls on the ground with the smaller end pointing directly away from the thrower. The winner is he who throws with best style and correctness; in America, in the

so-called Scot.-Amer. style of caber-tossing, the winner is he who throws the caber farthest.

**Cabes**. See GABES.

**Cabinda**. See KABINDA.

**Cabinet**, in one sense, was the name formerly given to the private audience-chamber of a monarch, as 'king's cabinet'; from this source is derived its political use for a body of ministers jointly responsible for the government of the country, and forming 'the motive power of the executive.' The cabinet dates from time of William III., who attended meetings, but practice ceased with George I., whose ignorance of English prevented him taking part in proceedings. In Pitt's time (1783) it consisted of himself and seven peers; numbers gradually increased; in 1915 it had twenty-three members; in Nov. 1919 consisted of following: prime minister and first lord of the Treasury\*; lord president of the Council\*; the chancellor of the exchequer\*; minister without portfolio; lord privy seal; lord chancellor\*; five secretaries of state (home affairs\*, foreign affairs\*, colonies\*, war\*, India\*); first lord of the Admiralty; minister of health; president of the Board of Trade; minister of labour; minister of food control; shipping controller; air minister; president of the Board of Agriculture, and president of the Board of Education—twenty in all. (Those marked thus \* are invariably in the cabinet.) Cabinet has no legal recognition, and until recently did not keep minutes. All members are privy councillors; their deliberations are confidential; it

owes responsibility to the House of Commons, an adverse vote of which on an important matter leads to the resignation of the cabinet as a whole. The members are appointed and may be dismissed by the prime minister with the theoretical consent of the crown. Owing to the large numbers composing the cabinet it is inevitable that the real conduct of government should fall into the hands of an 'inner cabinet.' During the Great War a small cabinet, consisting of the prime minister and first lord of the Treasury, lord president of the Council, four ministers without portfolio, and the chancellor of the exchequer—seven in all—formed the *War Cabinet*, which directed hostilities and also served the purposes of an ordinary cabinet. The War Cabinet was remarkable for including, in contradistinction to the invariable practice, a member (General J. C. Smuts) who had not a seat in either house of Parliament.

Anson, *Law and Custom of the Constitution*; and the works of Bagehot, Boutmy, Courtney, Dicey, Low, and Lowell.

**Cabinet Noir** (Fr.), Fr. government office, where the letters of obnoxious or suspected persons were secretly opened. The practice was intermittently in vogue from the 17th cent. down to the last years of the Restoration.

**Cable.** (1) Large, strong rope, usually of three or four strands of hemp, jute, or coir, or of wire and chain, such as are used for ships' anchors. Chain cables are generally made in eight lengths of 12½ fathoms each, shackled together. (2) Nautical measure

=200 yards—e.g., length of 100 fathoms, or, more accurately, one-tenth of a nautical mile.

**Cable**, GEORGE WASHINGTON (1844– ), Amer. novelist; established his literary reputation by tender, truthful, and humorous sketches of the Latin quarter of New Orleans and of Southern plantation life; author of *Old Creole Days* (1879); *The Grandis-simes* (1880), *Dr. Sevier* (1884), *The Cavalier* (1901), *Kincaid's Battery* (1908), etc.

**Cabot**, JOHN (1450–98), Ital. navigator; b. Genoa; naturalized at Venice (1476); settled in Bristol (1490); subsequently sailed from Bristol (May 2, 1497) under letters patent received from Henry VII. (1496); sighted Newfoundland, or Labrador, and coasted 300 leagues. In 1498 sailed again with five ships, but nothing more was heard of his expedition. His son, SEBASTIAN (c. 1474–1557), took part in 1497 expedition; some say discovered Hudson Bay and Strait (1517), though this is unlikely; explored in E. and S. America for Spain; returned to England (1549), and was appointed chief pilot; after life of travel became governor of London Company of Merchant Adventurers (1551).

Beazley, *John and Sebastian Cabot: the Discovery of North America* (1898).

**Cabra**, tn., Cordova, Spain (37° 29' N., 4° 26' W.); figured prominently in Moorish wars, and has ruined castle and cathedral; manufactures bricks and pottery. Pop. 13,000.

**Cabral** (or CABRERA), PEDRO ALVAREZ (d. c. 1501), Port. navigator and discoverer; planted

Port. flag in Brazil, which he called Santa Cruz (1500).

**Cabrera**, one of the Balearic Islands, Spain (39° 5' N., 2° 55' E.).

**Cabul**. See KABUL.

**Cacao**. See COCOA.

**Caccamo**, tn., Palermo, Sicily (37° 56' N., 13° 40' E.); commands fine view; agate, beryl, and jasper. Pop. 12,000.

**Caceres**. (1) Prov., Extremadura, Spain, intersected by riv. Tagus; fruit, wine, and oil (N.); grain and grazing (S.); most backward prov. of Spain. Area, 7,667 sq. m.; pop. 395,000. (2) Cap. of above (39° 28' N., 6° 22' W.), on Tagus; was captured from Moors (1225); anc. buildings. Pop. 17,000. (3) Or NUEVA CACERES, tn., Luzon I., Philippines (13° 40' N., 123° 10' E.), 10 m. from coast on Naga R.; some shipping. Pop. 17,900.

**Cachalot**. See SPERM WHALE.

**Cachar Plains**, dist., Surma valley, Bengal and Assam, India (24° 12'–25° 50' N., 92° 26'–93° 29' E.); rich vegetation; tea-growing region; rice, forest products; coal, petroleum, and iron. Pop. 415,000.

**Cachet**, LETTRE DE, Fr. writ corresponding to Eng. close writ; signed with king's name, countersigned by a secretary of state, and closed by royal seal (*cachet*); so-called 16th cent. onwards; previously variously known as letters close, letters of the little signet, *lettres du petit cachet*.

**Cachoeira**. (1) Tn., Bahia, Brazil (12° 32' S., 39° 2' W.), modern, well built; manufactures soap, cigarettes, and preserved meat. Pop. 25,000. (2) Tn., Para, Brazil (1° 3' S., 49° W.); exports rubber and cattle. Pop.

5,000. (3) Tn., Rio Grande do Sul, Brazil (30° S., 52° 50' W.); has important preserved meat factory. Pop. 45,000.

**Cacique**, or CAZIQUE, title given to chiefs of native tribes of Central and S. America.

**Cacodyl**, tetramethyl diarsine ( $\text{As}_2(\text{CH}_3)_4$ ), is a compound prepared by heating cacodyl chloride with zinc. It is a colourless, highly poisonous, stinking liquid (f.p. -6° C., b.p. 170° C.), insoluble in water, and which easily catches fire in the air.

**Cactus** ('prickly plant'), green, succulent, mostly leafless spiny plants, with globular, columnar, flattened or angled, often grotesquely shaped stems, and sessile, usually large and showy, flowers, natives exclusively of tropical America; formerly classed into one genus, *Cactus*; now subdivided into about eighteen genera, comprising about a thousand species. The most commonly cultivated in greenhouses are *Cereus*, *Opuntia*, *Phyllocactus*, *Mamillaria*. The fruit of *Opuntia vulgaris*, the prickly pear or Indian fig, is eaten in America and S. Europe, and the fleshy stems of *Melocactus* and others are consumed by cattle in dry districts of S. America. Some species (e.g., *Cereus giganteus*) attain a height of 70 ft.

**Cadder**, par. and vil., Lanarkshire, Scotland (55° 55' N., 4° 13' W.), on Forth and Clyde Canal; scene of Wallace's betrayal (1305). Pop. 14,500.

**Caddie**, corruption of the word 'cadet,' boy or man employed to carry clubs for golfers.

**Caddis Fly**, name for some neuropterous insects of the fam-

ily Phryganeidæ. The elongated larvæ live in water, and surround themselves with a tube consisting of small fragments of gravel, wood, etc., bound together by silk secreted from a 'spinning gland.' See also under NEUROPTERA.

**Cade, JACK** (d. 1450), Eng. rebel; leader of the Kentish insurgents (1450). He marched on London with 20,000 men, and after defeating a force sent against him by Henry VI., entered the city. His triumph was short-lived. Driven out of London by the citizens, his followers dispersed, and he became a wanderer; was captured, and died of wounds received in the struggle.

**Cadell, FRANCIS** (1822-79), Scot. naval officer who explored the riv. Murray, Australia (1850-59); murdered by crew while sailing to Spice Islands.

**Cadell, ROBERT** (1788-1849), Scot. publisher, partner in house of Constable, Edinburgh, which he resuscitated after its failure.

**Cadenabbia**, vil., health resort, on w. shore of Lake Como (45° 59' N., 90° 14' E.); contains Villa Carlotta (1747), with sculptures by Thorwaldsen and Canova.

**Cadency**, branch of heraldry treating of symbols (marks of cadency) borne on their shields by younger members and branches of a family, to distinguish their arms from those of the head of the house and of each other.

**Cader Idris**, mt. peak, Merionethshire, Wales (52° 42' N., 3° 54' W.), 4 m. s.w. of Dolgelley; precipices, fine views. Alt. 2,929 ft.

**Cadet**, younger son of an influential family; official name of a youth being trained as an

officer in the Brit. navy; youth undergoing a system of military training for officership.

**Cadiz**. (1) Prov., Andalusia, S. Spain, bordering on Atlantic and Strait of Gibraltar; mountainous; well watered; one of richest and busiest parts of country; supplies the world with sherry. Area, 2,834 sq. m.; pop. (est.) 478,800. (2) Cap. of above, on peninsula (36° 32' N., 6° 17' W.), 95 m. by rail s.s.w. of Seville; is one of the most famous towns of Spain; founded by Phœnicians (c. 1100 B.C.); Roman *Gades*; shipping in harbour burned by Drake (1587); two cathedrals, 16th and 18th centuries; suffers from defective communication with mainland; exports valued at over £1,000,000 annually; wine, salt, corks, canary seed, tunny fish, olives, and olive oil; graving dock; naval station; varied manufactures. Pop. 66,000.

**Cadman, SIR JOHN**, mining engineer and petroleum specialist; prof. mining in Univ. of Birmingham; director of Petroleum Department and chairman of Inter-allied Petroleum Council during Great War; K.C.M.G. (1917).

**Cadmium** (Cd=112.4), metallic element, chemically resembles zinc, obtained from zinc blende by distillation; in colour bluish-white like tin, but harder, ductile, and malleable; sp. gr. 8.6, m.p. 320° C., b.p. 772° C.; its sulphide (CdS), or 'cadmium yellow,' used as a pigment.

**Cadmus**, legendary founder of Thebes; son of Agenor, King of Phœnicia, and brother of Europa; married Harmonia, daughter of Ares and Aphrodite, and is said

finally to have become King of Illyria; said to have introduced the alphabet into Greece.

**Cadore**, mt. region of Dolomites, between Trentino and Carnia, Italy (46°—46° 40' N., 11° 20'—12° 25' E.); scene of fighting during Great War; gallantly carried by Italians (Nov. 1915); abandoned in general retreat to the Piave (Oct. 1917).

**Cadorna**, LUIGI (1850— ), Ital. generalissimo; in July 1914 became chief of the general staff; commander-in-chief on Italy's entrance into the war. Showed great strategic skill, especially in June 1916; after disaster of Caporetto (Oct. 24, 1917) was succeeded as commander-in-chief by General Diaz and appointed to represent Italy on the Allied War Council at Versailles; superseded in 1918 by General Giardino.

**Cadoudal**, GEORGES (1771—1804), Fr. Chouan leader; during the Revolution a very active partisan of the royalists, and refused all overtures of Napoleon, who sought to win him over; eventually arrested for conspiracy and executed in Paris.

**Cadoxton**, par. and tn., near bor. of Neath, Glamorganshire, Wales (51° 41' N., 3° 47' W.); coal mines and tin-plate works. Pop. 19,300.

**Cadre** (Fr.), a frame or framework; military term for the officers and permanent staff of any military unit, whether completely organized or a mere skeleton force to be clothed with men on mobilization; used in English in the latter sense.

**Caduceus** (class. myth.), the wand or staff of Hermes ('the herald, Mercury'), messenger of

the gods; also recognized by the Greeks as the herald's mark of office; fully developed form had a pair of wings and two serpents intertwined.

**Cadzow**. See HAMILTON (Scot. family).

**Cæcum**. See DIGESTION.

**Cædmon** (c. 660), the first Eng. poet. All that we know of him is drawn from Bede, who tells us that he was a herdsman of the monastery at Whitby, who received miraculously the gift of song and wrote several poems on Biblical subjects, finally dying in Whitby Abbey. Of his works in their original Northumbrian dialect only the nine opening lines of a *Hymn on the Creation* exist to-day. When the Northumbrian missionaries evangelized the Old Saxons of Germany they taught them Cædmon's poems, whence arose the Old Saxon poem on the *Heliand* (or 'Saviour'), and another on *Genesis*, which was trans. into the West Saxon dialect of England. These two fine poems, Old Saxon *Heliand*, and West, or Anglo-Saxon, *Genesis*, give us a distant impression of Cædmon's powers; *Genesis* influenced Milton in his writing of *Paradise Lost*.

**Caen**, city, Calvados, France (49° 11' N., 0° 21' W.); on Orne and Odon; anc. cap. of Lower Normandy; univ. founded by Henry VI. of England; hôtel de ville; museums; chief Norman churches, St. Etienne, La Trinité (1066), and St. Pierre; founded by William the Conqueror; taken by English (1346 and 1417); retaken by French (1743); lace, cider, dairy produce; birthplace of Auber. Pop. 47,000.

**Caerleon**, mrkt. tn., Monmouthshire, England (51° 37' N., 2° 58' W.), 3 m. N.E. of Newport; founded c. A.D. 50 (*Isca Silurum*); during Roman occupation headquarters of 2nd Augustan Legion; cap. prov. *Britannia Secunda*; parts of town wall exist; many Roman remains; associated with King Arthur; Tennyson wrote part of *Idylls of the King* in the Hanbury Arms. Pop. 2,000.

**Caerphilly**, mrkt. tn., Glamorganshire, Wales (51° 35' N., 3° 14' W.); collieries; ruins of fine castle with leaning tower. Pop. 32,800.

**Cæsalpinus**, ANDREAS (1519–1603), Ital. scientist; was physician to Clement VIII., and the most famous botanist of his day; was one of the first to attempt a comprehensive classification of plants upon a natural system.

**Cæsar**, name of family of Roman gens *Julia*, to which belonged Julius Cæsar; assumed by his adopted son, Octavius, first Roman emperor, and became synonymous with imperial ruler; from 136 borne by emperor's successor designate; revived in form *Kaiser* when King of Germans became Holy Roman Emperor in Middle Ages; Russian *Tsar*, or *Czar*.

**Cæsar**, GAIUS JULIUS (102–44 B.C.), Roman general and dictator; bound to democrats by family ties, although of patrician blood, he distinguished himself in army in East and in third Mithridatic War. Identifying himself with democrats, he became curule ædile (65 B.C.), pontifex maximus (63 B.C.), prætor (62 B.C.). In 60 B.C. he persuaded Pompey and Crassus to support

him ('First Triumvirate') against the oligarchy in his consulate (59 B.C.). He carried an agrarian law and secured governorship of Gaul for five years. By 51 B.C. he had reduced Gaul to a tribute-paying province. In 56 B.C. his command in Gaul, which should have expired March 1, 54 B.C., was renewed till 49 B.C.

After Crassus's death (53 B.C.), Pompey drifted apart from Cæsar. He passed a law 'de jure magistratuum' (52 B.C.) which made it possible to call Cæsar to account for unconstitutional acts. The quarrel between Cæsar and Pompey subsequently ended in Pompey's defeat (48 B.C.). Having defeated son of Mithridates at Zela (47 B.C.), Cæsar returned to Italy. His victory of Thapsus (46 B.C.) was death-knell of the Pompeian cause. In July he received the dictatorship for ten years. Next year he crushed a rising in Spain, and then returned to Rome and undertook reorganization of the Roman state. His measures were moderate and practical. He revived the Gracchan designs of transmarine colonization, extended local self-government, encouraged agriculture, and reformed provincial administration; but his government gradually tended towards undisguised absolutism, and he was assassinated (March 15, 44 B.C.). A brilliant and original soldier, a forceful administrator and great statesman, Cæsar founded the new monarchy at Rome. His assassination could not prevent the empire. See *ROME (Ancient History)*.

Hilary Hardinge, *Julius Cæsar* (Jack, 1912); Warde Fowler,

*Julius Cæsar* (1892); Mommsen, *History of Rome*.

**Cæsarean Section**, the operation for removal of a foetus from the womb by means of abdominal section; so called from a story of its being practised at the birth of Julius Cæsar.

**Cæsarion** (47–30 B.C.), Cæsar's putative son by Cleopatra; put to death by Augustus.

**Cæsium** (Cs=132·9), alkali metal, similar to potassium, discovered by spectroscopy in Dürkheim water; spectrum has two sky-blue lines (*cæsius*, 'sky-colour'); the metal occurs in mineral pollux; isolated by electrolysis of its fused cyanide.

**Cæsura** (lit., 'a cut'), in prosody, a pause, usually in the middle of a line of verse, but variable according to the form of stanza.

**Caffeine**, or **THEINE** (C<sub>8</sub>H<sub>10</sub>N<sub>4</sub>O<sub>2</sub>·H<sub>2</sub>O), an alkaloid obtainable from coffee, tea, guarana, Paraguay tea, kola nut, and cocoa (in small quantity); white, silky, crystalline substance; powerful heart stimulant.

**Caffyn**, KATHLEEN MANNINGTON (pseudonym IOTA), Brit. novelist; has written *A Yellow Aster* (1894), *Children of Circumstance* (1894), *Anne Mauleverer* (1899), *The Minx* (1900), *Whoso breaketh an Hedge* (1909), *Mary Mirrielees* (1916), etc.

**Cagayan**. (1) Prov., N. of Luzon, Philippines (17° 30'–18° 40' N., 121°–122° 20' E.); very fertile, heavily wooded; tobacco. Area, 5,291 sq. m.; pop. 155,000. (2) Cap. Misamis prov., Mindanao I., Philippines (8° 30' N., 124° 40' E.), on riv. near coast; gold. Pop. 7,000.

**Cagliari**. (1) Prov., Italy,

covering s. half of the island of Sardinia; zinc and lead mining (Iglesias dist.). Area, 5,184 sq. m.; pop. 521,200. (2) Cap. of above prov. and of Sardinia, on s. coast of isl. (39° 13' N., 9° 6' E.); Carthaginian stronghold (6th cent. B.C.); successively in hands of Romans, Goths, Saracens, Genoese, Pisans, Venetians, and Aragonese; bombarded by British (1708); Roman amphitheatre; citadel (13th cent.); cathedral (14th cent.) and univ. (late 16th cent.); good harbour; cottons, woollens, biscuits, soap, and salt; wine in vicinity. Pop. 55,000.

**Cagliari**, PAOLO. See under VERONESE.

**Cagliostro**, ALESSANDRO, COUNT (1743–95), Ital. charlatan; real name, Giuseppe Balsamo; travelled widely, making money by alchemy; was involved in affair of Diamond Necklace; died in prison.

**Cagnola**, LUIGI (1762–1833), Italian architect; designed the Arco della Pace, the Porta di Marengo, and the chapel of Santa Marcellina, all at Milan, and numerous other buildings.

**Cagots**, scattered race found in Gascony, Brittany, and Basque Provinces. During Middle Ages they were shunned as outcasts.

**Caher**, or CAHIR, tn., Tipperary, Ireland (52° 22' N., 7° 55' W.), on riv. Suir; agricultural products; remains of monastery; stalactite caverns in neighbourhood. Pop. 2,000.

**Cahors** (anc. *Divona*), tn., dep. Lot, France (44° 26' N., 1° 27' E.), on rocky peninsula; riv. Lot here crossed by finest mediæval fortified bridge in France; Romanesque-Byzantine cathedral (12th



and 13th cents.); univ. founded 1321, now united with that of Toulouse (1751); Clément Marot and Gambetta were natives (monuments to both); earthenware, farm implements. Pop. 13,600.

**Caicos and Turk's Islands**, group s. of Bahamas, Brit. W. Indies ( $21^{\circ} 26' N.$ ,  $71^{\circ} 10' W.$ ); under government of Jamaica; thirty small cays; eight inhabited; salt, sisal fibre, sponges, and turtle-shell; hot but healthy. Area, 165 sq. m.; pop. 5,600.

**Caillard**, SIR VINCENT HENRY PENALVER (1856—), Eng. administrator; served on headquarters staff in Egyptian campaign (1882); president of the Ottoman Public Debt Council and financial representative of Great Britain, Holland, and Belgium at Constantinople (1883–98); director of Vickers, Ltd.; president of Federation of Brit. Industries (1918–19).

**Caillaux**, JOSEPH (1863—), Fr. statesman; early entered Parliament, and soon was in high position in government; minister of finance (1910); premier (1911); but conduct of Franco-German Morocco crisis led to his fall. Again held portfolio of finance (1914), but tragic murder by his wife, Mme. Caillaux, of M. Gaston Calmette, editor of *Figaro* (March 1914), drove him from office. Mme. Caillaux was acquitted after trial of five days. In 1918 M. Caillaux was arrested for intriguing with the enemy, but was not brought to trial till 1920, when the High Court of Justice found him guilty and passed sentence of three years' imprisonment and deprivation of civic rights for ten years.

Having already been in prison for nearly three years, he was at once liberated.

**Caillé** (or **CAILLÉ**), RENÉ AUGUSTE (1799–1838), Fr. traveller; he penetrated to Timbaktu (1827–8); pub. *Journal of Travels through Central Africa*.

**Caiman**. See CAYMAN.

**Cain**. See ABEL.

**Caine**, SIR THOMAS HENRY HALL (1853—), Eng. novelist and dramatist; architect and journalist, but turned to novel writing; his works include *The Shadow of a Crime* (1885); *A Son of Hagar* (1886); *The Deemster* (1887); *The Bondman* (1890); *The Scapegoat* (1891); *The Manxman* (1894); *The Christian* (1897); *The Eternal City* (1901); *The Prodigal Son* (1904); *The White Prophet* (1909); *The Woman Thou gavest me* (1913); several of these dramatized and filmed. Dramas include *The Iron Hand* (1916) and *The Prime Minister* (1918). Negotiated terms with Dominion Government regarding copyright; knighted in 1918.

**Caine**, WILLIAM SPROSTON (1842–1903), Eng. politician and temperance reformer; sat in Parliament (1880 onwards); civil lord of Admiralty (1884); took much interest in India.

**Ca'ing Whale** (*Globocephalus melas*), found in enormous schools throughout N. Atlantic and even as far s. as New Zealand; term means 'driving' whale, because schools can be ca'd or driven like herds of cattle; reach 20 ft. in length; inoffensive and feed on cuttlefish; shepherded to a sandy beach and killed with lances; flesh pickled; stomachs dried and used as buoys.

**Caique**, pointed Turk. rowing skiff used on Bosphorus.

**Ca Ira**, a famous Fr. song of 1789. Words were by Ladré, a street singer. Refrain was war-cry of Revolution; prohibited by Directory (1797).

**Caird**, EDWARD (1835-1908), Scot. philosopher, brother of Principal John Caird; did much to spread the Hegelian system; was prof. of moral philosophy, Glasgow Univ., and afterwards master of Balliol (1893-1907); wrote on Kant, Comte, etc.

**Caird**, SIR JAMES (1816-92), Scot. agriculturist and author; attracted attention in 1849 by his *High Farming as the Best Substitute for Protection*; M.P., 1857, and after seven years secured passing of an Act authorizing collection of agricultural statistics; introduced making of Cheddar cheese into Scotland; served on several commissions and wrote on agricultural topics.

**Caird**, MONA, Eng. novelist and social reformer; attracted attention by article on marriage in *Westminster Review*. Has written several novels, also *The Morality of Marriage* (1897); *The Pathway of the Gods* (1898); *The Romantic Cities of Provence* (1906), and *The Stories of Sacrifices* (1915).

**Cairn**, name given by Scot. archaeologists to mound of stones raised over prehistoric burial place; akin to Eng. *barrow*. Cairns are of two varieties, chambered and unchambered: now erected as monuments.

**Cairnes**, JOHN ELLIOT (1823-75), Irish writer on political economy; was successively prof. of political economy at Dublin, Queen's Coll., Galway, and Univ.

Coll., London; issued, besides essays, *Character and Logical Method of Political Economy*; *The Slave Power*, etc.

**Cairngorm**, ornamental yellow stone, like topaz; found in fine granite of Cairngorm Mts., in Scot. Highlands, and elsewhere.

**Cairns**, seapt., Trinity Bay, N.E. coast of Queensland, Australia (16° 54' S., 145° 45' E.); excellent harbour; outlet for mineral fields of Chillagoe; coffee, tobacco, sugar. Pop. 3,600.

**Cairns**, HUGH M'CALMONT CAIRNS, 1ST EARL (1819-85), Brit. politician, entered Parliament (1852), and successively filled offices of solicitor-general, attorney-general, lord justice of court of appeals, and lord chancellor. Cr. earl in 1878.

**Cairns**, JOHN (1818-92), Scot. theologian; prof. of apologetics, and afterwards principal of the United Presb. Theological Hall at Edinburgh.

**Cairo**, cap. Egypt, r. bk. of Nile (30° 2' N., 31° 15' E.), 9 m. from apex of delta; joined by rail with Port Said (147 m.) and with Alexandria (130 m.); 150 mosques—oldest Amr and Ibn Tulûn, most beautiful that of Sultan Hassan; magnificent mausoleums (tombs of caliphs) in E. part; mosques containing tombs of the Mamelukes in S. part.; univ. El-Azhar (988): see of bishop of Coptic, Greek Orthodox, and R.C. churches; chief public buildings, Abdin palace, citadel, barracks, public works dep., and other government buildings; in Old Cairo is 'granary of Joseph'; two museums—the one containing Egyptian treasures, the other

specimens of Arab. art; native city fast disappearing to make way for hotels, offices, and shops; three railway stations, and three bridges across Nile; electric trams and lighting; suburbs contain large and increasing European pop. Inhabitants include Turks, Berbers, Copts, Arabs, Abyssinians, Jews, and Nubians; textiles; founded c. 973; citadel built by Saladin (1176); seized by Turks (1517); taken by French (1798); passed to Turks (1801); British since 1882; destructive Nationalist riots (April and May 1919). Pop. 680,000. Poole, *Cairo*.

**Cairo**, city, Illinois, U.S. (37° N., 89° 10' W.), at confluence of Mississippi and Ohio; much riv. commerce; grain; oil; the Eden of Dickens's *Martin Chuzzlewit*. Pop. 14,500.

**Caisson**. (1) In engineering, name given to large wooden or iron sort of box used in construction of piers of bridges; is open at bottom, and connected with surface of the water by a cylindrical shaft. In it excavation is carried on, and to prevent the water leaking in, compressed air is used. The caisson is made to descend as work proceeds, and the pier is built on its upper platform. In some cases the caisson actually contains the pier, the construction being carried on inside, and the caisson removed when the pier is finished; access obtained by air lock. *Caisson Disease*, caused by exposure to high atmospheric pressures in compressed air chamber of caisson, is manifested by pains, embarrassment of breathing,

paralysis, and other disagreeable symptoms. (2) Military term applied to an ammunition chest, or a mine formed by burying powder in a case or an ammunition wagon. (3) A boat-shaped gate, used to close the entrance to a dry dock. The caisson is placed in position and then filled with water, which causes it to fit tightly in its place.

**Caithness**, co., N.E. extremity of Scotland (58° 8'–58° 40' N., 3° 1'–3° 53' W.), bounded E. and S.E. by North Sea, and on W. by Atlantic; mostly barren and treeless moors; mountainous in S. (Morven, 2,313 ft.; Scaraben, 2,054 ft.); watered by Wick, Forss, and Thurso; many lochs; precipitous coast with 'stacks'; climate cold, wet, and windy; chief towns, Wick and Thurso; oats, barley, turnips, potatoes; breeding of high-class pedigree horses and cattle; tweeds, ropes, agricultural implements, whisky, flagstone pavements; fisheries. Area, 628 sq. m.; pop. 32,000.

**Calvano**, tn., Naples, Italy (40° 57' N., 14° 18' E.); glass making. Pop. 12,000.

**Cajamarca**, city, cap. of prov., N. Peru (7° 6' S., 78° 30' W.); woollens and cottons; silver mining and cattle raising; place where Atahualpa was put to death by Pizarro (1533). Pop. (city) 9,000; (dep.) 333,300.

**Cajanus**, genus of Leguminosæ, related to Fr. bean, with single species, *C. indicus* (tropical Africa). Two races of the plant exist, *C. bicolor* and *C. flavus*, which produce dal or dhal seeds, eaten in India and imported into Britain as cattle food.

**Cajeput**, or CAJUPUTI (*Mela-*

*leuca cajuputi*), tree belonging to myrtle family; leaves fermented and distilled yield 'oil of cajeput'; strongly aromatic, antispasmodic and promoting sweat; used in cases of chronic rheumatism; bark for boat making and roofing.

**Cal.**, California, U.S.; also signifies calendar.

**Calabar**, dist., Guinea Coast, W. Africa ( $4^{\circ} 16' - 7^{\circ} 7' \text{ N.}$ ,  $6^{\circ} 6' - 8^{\circ} 40' \text{ E.}$ ), now part of Nigeria, extending on E. to borders of what was formerly Ger. Kamerun; formerly slave-shipping port, and notorious for cannibalism, human sacrifice, and infanticide, all of which have been abolished; includes Old Calabar (Duke Town) and New Calabar (port of S. Nigeria, c. 100 m. to W.); exports palm oil, kernels, ivory, rubber, etc.; missionary station. Pop. (Old Calabar) c. 50,000. See Livingstone's *Life of Mary Slessor* (1916).

**Calabar Bean**, seed of *Physostigma venenosum*; contains alkaloid (*physostigmine* or *eserine*) used medicinally in tetanus, chorea, and as stimulant for increasing glandular secretion and peristaltic motions of intestine; also as local application for the eye, causing contraction of pupil, relieving ocular paralysis resulting from diphtheria, conjunctivitis of infants, corneal ulcers; formerly used by natives of Calabar in witchcraft.

**Calabria**, terr. div., S. Italy ( $37^{\circ} 55' - 40^{\circ} 8' \text{ N.}$ ,  $15^{\circ} 36' - 17^{\circ} 10' \text{ E.}$ ), peninsula between Gulf of Taranto and Tyrrhenian Sea; prov. of Catanzaro, Cosenza, and Reggio di Calabria; covered by extensions of Apennines; heavily forested in centre; grain, rice,

fruits, flax; marble, salt, copper, gypsum; volcanic; suffered from disastrous earthquakes in 1783, 1905, 1907, and 1908. Colonized by Greeks 8th cent. B.C. (Magna Græcia); belonged to Rome 3rd cent. B.C.; Saracens expelled by Normans 11th cent. A.D.; formed part of kingdom of Two Sicilies; long infested by banditti. Area, 5,819 sq. m.; pop. (est.) 1,471,800.

**Caladium**, genus of leafy tropical herbaceous perennials, suitable for hothouse cultivation.

**Calafatu**, Rumania. See under KALAFAT.

**Calahorra**, city and episc. see, Logrono, Old Castile ( $42^{\circ} 18' \text{ N.}$ ,  $1^{\circ} 58' \text{ W.}$ ); birthplace Quintilian; cathedral great place of pilgrimage; dist. fertile; fruit, vegetables, and wine. Pop. 10,000.

**Calais**, tn., the chief port for passenger traffic between England and the Continent, Pas-de-Calais, France ( $50^{\circ} 57' \text{ N.}$ ,  $1^{\circ} 50' \text{ E.}$ ); 21 m. E.S.E. of Dover; harbour accessible to vessels of largest size; old town on island hemmed in by canal and harbour basins, which cut it off from manufacturing quarter of St. Pierre de Calais; lace and tulle industry (introduced from Nottingham 1818); fishing centre; entered Hanseatic League (1303); captured by Edward III. in 1347 (monument to six burghers by Rodin); lost in 1558. During the Great War a place of much military and naval activity; frequent objective of Ger. air raids; considerable damage done in 1918. Pop. 72,300.

**Calamander Wood**, wood of large tree (*Diospyros hirsuta*) in low country of Ceylon; produces

the well-known variegated ebony; now very scarce; wood greyish brown with broad or narrow belt of black.

**Calamianes** (CULION ISLANDS), group, Philippines ( $11^{\circ} 40' - 12^{\circ} 24' \text{ N.}$ ,  $119^{\circ} 40' - 120^{\circ} 24' \text{ E.}$ ); cattle raising; bamboo; edible birds' nests, turtles. Coron, on Busuanga I., is chief town. Area, 677 sq. m.; pop. c. 16,300.

**Calamine** ( $\text{ZnCO}_3$ ), mineral, zinc carbonate, rhombohedral grey, yellow, or buff crystals; is used as a pigment in ceramic painting; name also applied in America to hydrous zinc silicate or smithsonite.

**Calamites**, extinct plants resembling *Equisetum* (common horse-tail), but enormously larger (est. height, 90 ft.); flourished during formation of Coal Measures, in which are fossil remains. Common fossil calamite is a cast of the internal or medullary cavity of the stem.

**Calarasi**, or STIRBEY, tn. and riv. port, Jalomitsa, Rumania ( $44^{\circ} 11' \text{ N.}$ ,  $27^{\circ} 20' \text{ E.}$ ), on Borcea arm of Danube, opposite Silistria; in fenlands on railway between Bukharest and Constanza; wheat, linseed, hemp, timber; occupied by Bulgarians Dec. 9, 1916. Pop. 11,000.

**Calasiao**, tn., Luzon, Philippines ( $13^{\circ} \text{ N.}$ ,  $120^{\circ} 15' \text{ E.}$ ); tobacco, hat manufacture, and weaving. Pop. 17,000.

**Calatafimi**, tn., Trapani, Sicily ( $37^{\circ} 54' \text{ N.}$ ,  $12^{\circ} 51' \text{ E.}$ ); ruins of anc. *Segesta* in vicinity; 2 m. s. Garibaldi won his first victory (May 1860); street named after SAMUEL BUTLER (author of *Erewhon*), who frequently resided in the town. Pop. 12,000.

**Calatayud** ('castle of Ayub,' its Moorish founder), city, Aragon, Spain ( $41^{\circ} 21' \text{ N.}$ ,  $1^{\circ} 39' \text{ W.}$ ), on main railway to Madrid; lower and upper (Moorish) towns; interesting churches; castle on rocky eminence; birthplace of Martial; dist. fertile. Pop. 11,500.

**Calbayog**, tn., Samar I., Philippines ( $12^{\circ} 5' \text{ N.}$ ,  $124^{\circ} 38' \text{ E.}$ ); has steamboat connection with Manila; hemp and extensive fishing. Pop. 16,000.

**Calbe**, tn., Saxony ( $52^{\circ} 39' \text{ N.}$ ,  $11^{\circ} 23' \text{ E.}$ ), on the Saale; ry. jn.; textiles and paper; soft coal in vicinity. Pop. 12,000.

**Calcarea**. See SPONGES.

**Calcareous Algæ**, minute plants which abstract calcium carbonate from sea water, incorporate it, and build up with skeletons massive limestone; still active in Bay of Naples; in former times gave rise to enormously thick reefs, especially in Triassic period.

**Calcareous Rock**, rock in which calcium carbonate (e.g., limestone and chalk) is predominant; generally of aqueous origin; remains of organic life—e.g., corals, foraminifera.

**Calcliferous Formation**, a term used by Amer. geologists for one of subdivisions of Lower Silurian or Ordovician system of North America; great limestone group, dolomitic or arenaceous.

**Calcination**, or CALCINING, process of heating various metallic ores in furnaces or heaps for the extraction of metals; volatile substances, such as sulphur and arsenic, may be expelled or an oxide formed by exposing heated ore; when limestone is calcined, quicklime is left, carbon dioxide being expelled.

**Calcite**, mineral, calcium carbonate ( $\text{CaCO}_3$ ) crystallized in rhombohedral hexagonal form; occurs as calc spar, Iceland spar (purest form), nail-head and dog-tooth spar. Calcite is decomposed by heat into calcium oxide and carbon dioxide; effervesces when treated with acids, liberating carbon dioxide.

**Calcium** ( $\text{Ca}$ , 40.07), metallic chemical element; sp. gr. 1.58; silver white, lustrous, ductile, and malleable; easily oxidizes in air, burns brilliantly, forming calcium oxide or lime; decomposes water with liberation of hydrogen. Abundant in nature combined with metallic bases as carbonate,  $\text{CaCO}_3$  (limestone, chalk, marble), phosphate,  $\text{Ca}_3(\text{PO}_4)_2$  (minerals apatite and phosphorite), fluoride,  $\text{CaF}_2$  (fluor spar). Occurs dissolved in most natural waters as carbonate or sulphate; calcium phosphate causes hardness in bones, eggshells (carbonate). Metal is obtained by decomposing fused calcium chloride by means of the electric current.

**Calc-sinter**, or CALCAREOUS TUFFA, carbonate of calcium found in stalagmites and stalactites.

**Calculating Machines**, now largely used to simplify work of arithmetical calculation and to ensure accuracy. Only means of producing reliable results in construction of mathematical and astronomical tables and tabulation of functions. Vary in construction from the simple *Slide Rule* to complex cash registers and electric tabulators. The elements of nearly all ordinary calculating machines are cylindrical disks, on the surface of which are

placed the figures 0 1 2 . . . 9. These disks are so connected that when a number disk is rotated ten places, the number disk of the next order moves one place. This suffices for addition. For subtraction, the disks are rotated in the reverse direction. Multiplication and division, the extraction of the square root, etc., are also performed by these machines. The motion of the disks was formerly produced directly by the hand; now a lever is employed. The use of keys for setting the sums to be worked has resulted in speed and accuracy of movement.

The Burroughs adding machine is largely used in business houses, and a recent and most useful modification is the combination of typewriter and calculating machine. Specialized calculators include *Curvometers*, for measuring length of curves; *Planimeters*, for determining area of a figure; *Integrators*, which evaluate a definite integral; and *Harmonic Analysers*, which determine the integrals of a curve. *Cash Registers*, which exhibit amount of sale and add up total receipts, are in almost universal use; while in the U.S. an electric tabulating machine is used for recording and summarizing the census returns. Similar machines have been adopted by many large business houses for cost-keeping.

**Calculators**, LIGHTNING, popular name for persons endowed with unusual powers of swift mental calculation; such persons are gifted with exceptionally good memory for combinations of figures and remarkable faculty for grouping numbers.

Amongst these prodigies are GEORGE PARKER BIDDER; Terah Colburn, an American who was exhibited at age of six; Iriandi, an Italian shepherd boy; Arthur Griffith, Annich, Mondeux, Magimelle, Pughiesi, and Vinckler.

**Calculus of Variations** has to take account of changes of *form* as well as of magnitude in functions, while the differential and integral calculus, of which the calculus of variations is an offshoot, deals only with changes in magnitude. Such problems as the following fall under its treatment: (1) To find the curve of quickest descent ('brachistochrone') from one given curve to another given curve. It was a special case of this problem proposed in 1696 that gave rise to the calculus of variations. (2) Given the surface of a solid of revolution, to find its form, that the solid contents may be a maximum. (The result of the first problem is a cycloid, of the second a sphere.) Histories of the calculus of variations have been written by Woodhouse (1810) and Todhunter (1861). See INFINITESIMAL CALCULUS.

**Calcutta**, cap. Bengal, largest city of India ( $22^{\circ} 34' N.$ ,  $88^{\circ} 22' E.$ ), on l. bk. of Hugli, 85 m. from sea. To s.w. of city proper is Fort William; site of original fort occupied by post office; between the Hugli and Chauringhi Road is the Maidan, great open space with racecourse, Eden gardens, cricket grounds, and numerous statues of Anglo-Indian notabilities. East of the Maidan is the European quarter, with clubs, hotels, theatres, and private residences; S.E. is St. Paul's

Cathedral, and near by the All India Memorial Hall of the Victoria memorial. Government House is a partial copy of Kedleston Hall, Derbyshire. Other important buildings are the town hall (after Ypres), Dalhousie Institute, and Bengal Secretariat and university. Near post office is site of Black Hole of Calcutta, in which, after capture of the city by Suraja Dowla (1756), all but 23 of 146 Brit. prisoners perished of suffocation. To N. extends native city, with narrow, crowded streets. City linked with industrial suburb of Howrah by swing bridges. On r. bk. of river are famous botanical gardens. Calcutta monopolizes export trade of Ganges and Brahmaputra valley, and is the great distributing centre for imports. Exports jute, tea, hides, skins, oilseeds, grains and pulses, raw cotton, lac, coal, raw silk, saltpetre, and oils. Imports mainly cotton goods, but also metals, sugar, machinery, hardware, etc. Foreign trade (1914-15) valued at nearly £85,000,000. Docks extend ten miles; Port Trust progressive and efficient. Industries may be gauged from exports. Monsoon climate; temp. of hot weather averages  $85^{\circ} F.$  Average rainfall of 60 in. falls in 118 days. Bulk of inhabitants Hindus, but large numbers of Mohammedans. Pop. with suburbs, 1,222,300. Founded by Job Charnock (1686); attacked and captured by Suraja Dowla (1756); retaken by Clive (1757); cap. of India down to 1912, when superseded by Delhi.

**Caldecott**, RANDOLPH (1846-86), Eng. artist; attained fame

by humorous drawings in *Graphic*; also by illustrations to Washington Irving's books, and to various nursery stories.

**Calder.** (1) **EAST**, vil., Midlothian, Scotland (55° 53' N., 3° 28' W.), 11 m. S.W. of Edinburgh; shale mines and oil-works. Pop. of par. of Kirknewton and East Calder, 2,900. (2) **MID**, 12 m. S.W. of Edinburgh, in midst of rich shale oil field. Pop. 3,200. (3) **WEST**, 16 m. W.S.W. of Edinburgh; has grown with development of oil shale and coal seams. Pop. 7,700.

**Calder**, **SIR ROBERT** (1745-1818), Brit. admiral, commanded one of two Brit. divisions guarding approaches to the Channel (1805); encountered Villeneuve, 120 m. N.W. of Cape Finisterre; captured two enemy ships, but did not on following day resume action; for this was court-martialled and reprimanded; nevertheless had forced Villeneuve to retreat to Cadiz, and had foiled Napoleon's invasion project.

**Calderon**, **PHILIP HERMOGENES** (1833-98), Anglo-Fr. painter of Span. parentage; from 1853 onwards contributed to the Academy (R.A. 1867, and keeper). Best-known works, *Broken Vows* (1857), *His Most Noble, High, and Puissant Grace* (1866), *Ruth and Naomi* (Walker Gallery, Liverpool); famous for excellent draughtsmanship and technique.

**Calderon de la Barca**, **PEDRO** (1600-81), the greatest of Span. dramatists; early plays were praised by Lope de Vega, to whose supreme place in Span. theatre he shortly succeeded; was patronized by Philip IV.; later entered the priesthood, but

was eventually recalled to court, and continued his dramatic work for the remaining years of his life. A prolific writer (about 120 of his plays are still extant), he has been classed by Schlegel with Homer, Dante, and Shakespeare. Eng. trans. include *Eight Plays of Calderon*, by E. Fitzgerald; *Select Plays of Calderon*, by Norman Maccoll; a fragment of *The Magician*, by Shelley, and trans. by D. F. MacCarthy (6 vols.).

**Calderwood**, **HENRY** (1830-97), Scot. philosopher, originally a Presb. minister; prof. of moral philosophy at Edinburgh (1868); author of *The Philosophy of the Infinite* (1854), etc.

**Caldicott**, **ALFRED JAMES** (1842-97), Eng. musician; principal of N. London College of Music, and conductor at the Comedy Theatre (1893); famous for his glees; wrote oratorio *The Widow of Nain* (1881).

**Caleb** ('dog'), one of spies sent by Moses to spy out land of Canaan; advised immediate attack (Num. 14); he and Joshua only survivors of those who left Egypt to enter promised land; received Hebron and district.

**Caledon**. (1) Dist. and tn., S.W. of Cape of Good Hope, S. Africa (34° 14' S., 19° 26' E.); rising health resort. Pop. (dist.) 15,000; (tn.) 3,500. (2) Trib. of Orange R., rising in mts. dividing Basutoland and Natal; joins Orange in 30° 34' S., 26° 5' E.

**Caledonia**, Roman name for that part of Scotland to the N. of the Roman wall running between the Firths of Forth and Clyde. The name first occurs in Lucan (A.D. 64). The conventional poetic name for Scotland.



**Caledonian Canal**, waterway, in counties Inverness and Argyll ( $57^{\circ} 5' \text{ N.}$ ,  $4^{\circ} 50' \text{ W.}$ ), joining Lochs Dochfour, Ness, Oich, Lochy, and connecting North Sea with Atlantic Ocean;  $60\frac{1}{2}$  m.; cost £1,311,270; opened 1822; largely used by fishing fleets; favourite tourist route.

**Calendar**, method of dividing time into hours, days, weeks, months, years, etc. Name is derived from Roman 'Calends,' the first day of every month.

The periodical occurrence of certain terrestrial and celestial phenomena originated the first division of time, but this natural method of division has some disadvantages which in certain cases, as with the month, have caused arbitrary divisions to be adopted. The alternations of light and darkness gave the *solar day*, the moon's cyclic changes gave the *lunar month*, and the periodic motion of the earth round the sun, evidenced by the seasons, gave the *solar year*. The division of the day into 24 hours and of the week into 7 days has no astronomical basis.

*Day*.—From the earliest times the day has been divided into 24 hours, but different nations have adopted different methods both as regards starting and the counting of the hours. Thus the Babylonians began the day at sunrise, the Jews at sunset, the Egyptians and Romans at midnight, a method adopted by most modern peoples. The civil day in most countries is divided into two portions, each of 12 hours, and so the abbreviations A.M. (*ante meridiem*) and P.M. (*post meridiem*) are required to denote

hours before and after noon. For astronomical purposes, 24 hours are counted continuously from midnight, and this system, used by the Brit. military authorities, is becoming increasingly common in ordinary civil life; its advantages are obvious. See DAY.

*Week*, a period of 7 days, and possibly due originally to the number of planets known to the ancients; but origin is very doubtful. Eng. names of days of week are of A.S. origin. The Lat. names are preserved, with modifications, in the modern Fr. names of the days of the week.

*Month* originally meant the time of one revolution of the moon, but has since become an arbitrary division of the year, on account of the difference of about 11 days between 12 lunations and the solar year.

*Year*.—The civil year is regarded as commencing at different times by different nations, but the European system is gradually extending. The astronomical year is the time of the earth's revolution round the sun—365 days 5 hours 48 min. 46 sec. mean solar time. See TIME.

The calendar now generally adopted is that due to the Romans. At the time of Julius Cæsar the difference between the civil and astronomical years was about two months; this was due to negligence in observance of the somewhat complicated system adopted from the Greeks. Cæsar, taking the astronomical year as  $365\frac{1}{4}$  days, adopted a simpler arrangement, fixing the number of days in the alternate months Jan., March, May, July, Sept., and Nov. as 31; the other months,

with the exception of Feb., each having 30 days. Feb. was ordinarily to have 29 days, but 30 every fourth year. This was altered in the time of Augustus, the month Sextilis being called after him and given 31 days. So others were changed, and the present anomalous system arose. The *Julian Calendar* continued in use till 1582, by which time the cumulative error of about  $11\frac{1}{4}$  min. amounted to 10 days. The correction was made by Pope Gregory XIII., and hence we have the *Gregorian Calendar*. Pope Gregory ordained that the years 1600, 1700, etc., should only be reckoned as leap-years when multiples of 4 after omitting the two ciphers, which amounts to counting three days in 400 years less than reckoned in the Julian calendar. If our present value of the solar year be correct, the error of the Gregorian calendar will only amount to one day in about 3,320 years.

The *New Style* (n.s. — i.e., Gregorian) was adopted late by Prot. countries; in Britain by Calendar Act (1750), when day following Sept. 2 was made Sept. 14. Greek Church (in Russia, Greece, etc.) still retains Julian calendar (*Old Style*—o.s.). Documents, etc., are sometimes doubly dated (old and new style). In Fr. Revolution, National Convention decided to begin a new era with Sept. 22, 1792 (foundation of Republic). Year was to be of 12 months (viz. Vendémiaire, Brumaire, Frimaire, Nivose, Pluviose, Ventose, Germinal, Floréal,

Prairial, Messidor, Thermidor, Fructidor) of 30 days each; there were to be 5 festival days at end—to Virtue, Genius, Labour, Opinion, Rewards; Revolution Day was to be added every fourth year. Napoleon restored the Gregorian calendar (1806).

The *Jewish* year consists of 12 lunar months, an additional month being intercalated at intervals.

The *Mohammedan* year also has 12 lunar months, but, as they do not intercalate, there is no correspondence between months and seasons.

In *Hindu* calendar solar year regulates civil affairs in Bengal and part of Madras; lunar year is used for domestic and religious purposes over all India. Each of the 12 months begins with the sun's entering a sign of Hindu zodiac. First day of Hindu year is our April 12.

*Ecclesiastical Calendar*.—Partly based on the solar year and partly on the lunar month; thus we get some eccles. feasts 'fixed,' others 'movable.'

*Easter* is the most important feast, as it determines others. Method of fixing date very complicated, but tables (see Book of Common Prayer) are available, giving date for any year. These tables depend upon what are known as the DOMINICAL LETTER and the GOLDEN NUMBER. Easter is Sunday next after the 14th day of the paschal moon, and must lie between March 22 and April 25. Other principal Church feasts depending on Easter are:

|                            |         |                  |
|----------------------------|---------|------------------|
| Septuagesima Sunday . . .  | 9 weeks | } before Easter. |
| First Sunday in Lent . . . | 6 „     |                  |
| Ash Wednesday . . . .      | 46 days |                  |

|                           |         |                 |
|---------------------------|---------|-----------------|
| Rogation Sunday . . . . . | 5 weeks | } after Easter. |
| Ascension Day . . . . .   | 40 days |                 |
| Whitsunday . . . . .      | 7 weeks |                 |
| Trinity Sunday . . . . .  | 8 „     |                 |

**Calendering**, the smoothing or glazing of textile fabrics and paper by passing them between cylinders of steel or wood revolving at different speeds.

**Calends**, first day of the anc. Roman month, which at first was lunar (29 or 30 days). *Ides*, 13th or 15th of the month; and eight days before the *Ides* (5th or 7th) the *Nones*. A promise to pay *ad kalendas Græcas* was equivalent to a refusal to pay at all, as the Greeks had neither calends, *ides*, or *nones*.

**Calgary**, chief city of S. Alberta, Canada (51° 2' N., 114° 2' W.), on Bow and Elbow rivers, and on C.P.R.; alt. 3,380 ft.; commercial and industrial centre of a large dist.; irrigation necessary; progressive and rapidly growing town, with electric cars and lighting; station of Canadian Mounted Police, and of Hudson Bay Co.; ry. workshops, lumber mills, tanneries. Pop. 43,700.

**Calhoun**, JOHN CALDWELL (1782-1850), Amer. statesman, secretary of war under President Monroe (1817-25); twice vice-president of U.S. (1825-32). As secretary of state under President Tyler (1843) signed treaty for annexation of Texas; opposed war with Mexico (1846-7). Was an advocate of slavery, and a champion of the state's right to 'nullify' Federal law, which he expounded in his *Address to the People of S. Carolina* (1831).

**Call**, tn., Colombia, S. America (3° 29' N., 76° 38' W.), on Cauca

R.; copper and coal mines in neighbourhood, and iron smelted; quinine and much agriculture. Pop. c. 16,000.

**Calibo**, tn., Panay I., Philippines (11° 42' N., 122° 20' E.), 25 m. W. by N. of Capiz; cotton and abaca fabrics. Pop. 15,000.

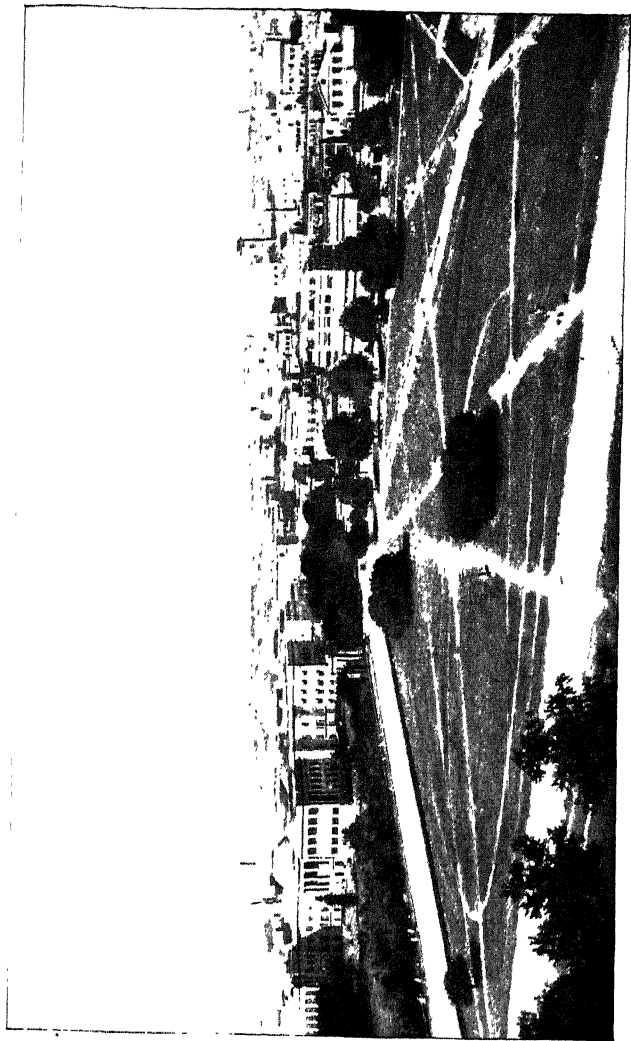
**Calibration**, the process of ascertaining the place and amount of variation in a scientific instrument. If the bore of a thermometer tube varies in width, variation in bore will introduce an error. The process is also applied to burettes used in chemical analysis, stretched wires used in potentiometers and arrangements such as the Wheatstone Bridge, sets of weights used for balances of high accuracy, spectroscopes used for determination of length of light-waves, galvanometers intended to give absolute measure of a current, etc.

Watson, *Text-Book of Practical Physics*.

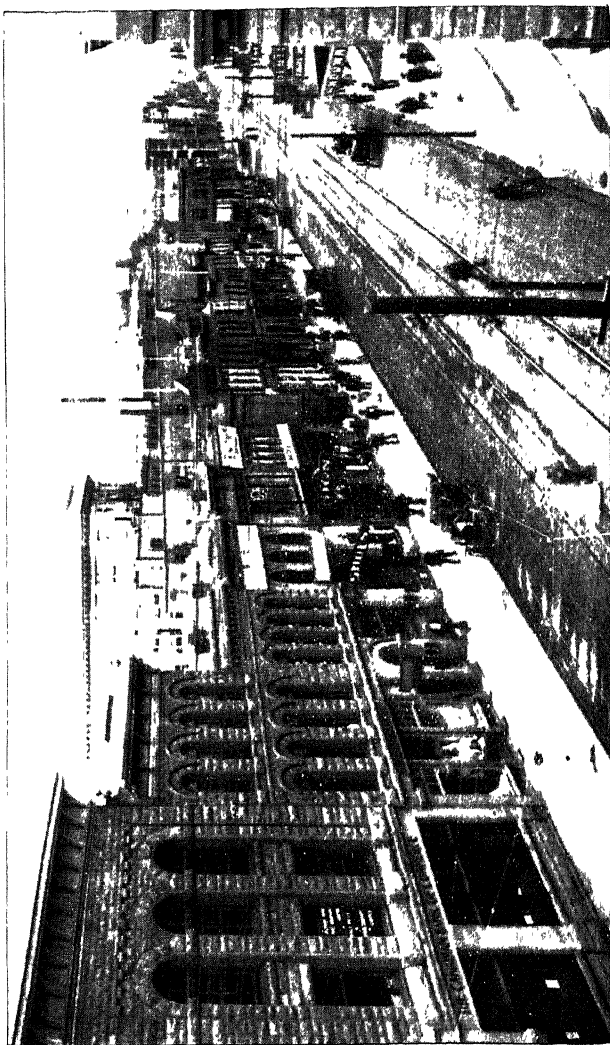
**Calico**, grey or bleached cotton cloth; when printed upon, is known technically as 'print'; name derived from town of Calicut (Madras), where cotton cloths were made, 16th cent. See COTTON.

**Calicut**, seapt. tn., Madras, Brit. India (11° 12' N., 75° 48' E.); first Ind. port visited by Europeans (1486). Anciently a flourishing city and trade centre; ceded to British (1792); chief exports, coffee, spices, and timber. Pop. 78,400.

**California**, state, U.S., on Pacific coast (32° 30'-42° N., 114°



CALCUTTA FROM THE MAIDAN.



CALGARY—EIGHTH AVENUE.

6'-124° 30' w.); bounded N. by Oregon, E. by Nevada, Arizona, S. by Mexico, and W. by Pacific. Surface generally consists of two great mountain systems running lengthwise through state, with a broad valley between them. These mts. are the Sierra Nevada in the E. and the Coast Range along the coast: chief peaks of former, Mt. Whitney, Fisherman Peak; of latter, San Bernardino, San Jacinto. In the S. is the Tehachapi range, uniting the two great systems. The central valley is remarkable for beauty, and is called the Great Valley of California; it is over 500 m. long and from 40 to 60 m. wide. It is drained by the Sacramento and the San Joaquin, which flow respectively through the N. and S., and, uniting in lat. 38° 3' N., enter Suisun Bay to N. of San Francisco. The famous Yosemite Valley breaks through the E. branch of the Sierra Nevada. Chief lakes are Tulare, Owens, Mono, Tahoe, Honey, Goose, Klamath. In the S. are depressed desert regions. Chief towns are San Francisco, Los Angeles, Oakland, Sacramento (cap.), San Diego, Pasadena, San José, Alameda. Climate is cold and wet in N., but in S. dry and semi-tropical.

Flora includes redwood and mammoth trees, wild oats, alfalfa, and great variety of flowering shrubs. Fauna includes grizzly bears, pumas, wolves, deer, lizards, woodpeckers, quails.

*Resources.*—Gold is extensively mined; quicksilver, lead, silver, copper, iron, antimony, chromium are found in considerable quantities, as well as rock salt, borax, asphalt, soda, sulphur, and china

clay; petroleum abounds, but there is little coal. Agricultural wealth is remarkable, though in places irrigation is necessary; wheat and barley extensively cultivated; grapes (wine-making likely to be discontinued owing to prohibition), oranges, lemons, olives, citrons, peaches, pears, cherries, apricots, and other fruits largely produced; sugar-beet, cotton, tobacco, hops also cultivated. There are immense forests, with fir, cedar, pine, and other trees; and lumbering is an important industry. Sheep and cattle raised; ostrich farming carried on; silk produced; fisheries important. Industries include canning of fruits and vegetables, meat packing, flour milling, brewing, dairying, distilling, shipbuilding, tanning; exports, fresh, dried, and canned fruit, cereals, timber, wool, sugar, mineral products, petroleum, tobacco. California is connected with eastern states by four rail-ways; mileage, 9,440.

Inhabitants include persons of Brit., Ger., Canadian, Ital., Fr., and Swed. extraction; there are also Chin., Jap., Ind., and negro inhabitants; but 75 per cent. of pop. is Amer. by birth. Area, 158,297 sq. m. (2,645 sq. m. being water); pop. 3,119,400.

Executive is in hands of governor, assisted by lieutenant-governor and five ministers; legislative power vested in senate of 40 members and assembly of 80 members, former elected for four, latter for two years. California has woman suffrage. The state sends 2 senators and 11 representatives to Congress.

Education is free and obliga-

tory. The Univ. of California superseded Coll. of California; established at Oakland 1869 (having obtained charter 1868); removed to present site, Berkeley (1873); fine situation by San Francisco Bay, with large grounds on slopes of Berkeley Hills; handsome buildings raised; besides colleges at Berkeley Univ., now includes Lick astronomical department near San José, art department (formerly 'Mark Hopkins Institute of Art') in San Francisco, univ. farm at Davisville, botanical laboratory at Whittier, biological laboratory at La Jolla, and other branches; noted library. The Leland Stanford Junior Univ. at Palo Alto is also famous.

Hittell, *History of California* (1885-95); Royce, *California* (1886); Chapman, *The Founding of Spanish California* (1916).

**California**, LOWER, peninsula, terr. of Mexico, between Gulf of California and Pacific Ocean (30° N., 109° 53' W.); mountainous; water and vegetation scarce, but valleys produce maize and wheat; horses and cattle reared; gold and silver mining and pearl-oyster fishing. Pop. 52,200.

**Caligula**, GAIUS CÆSAR (A.D. 12-41), succeeded Tiberius as Roman emperor (A.D. 37); tyrannical, cruel, profligate; insane; insisted on divine honours; was assassinated.

**Caliph**, name given to successors of Mohammed. The story of the Mohammedan chiefs who bore the name of caliph falls into three dynasties: (1) The four caliphs who severally succeeded Mohammed; (2) the Ommiad caliphs; (3) the Abbasid caliphs.

Mohammed, dying without male issue, was succeeded (A.D. 632) by Abu-Bekr, father of Ayesha, the prophet's wife; at his death (634) he nominated Omar, another relative, as his successor. Omar was stabbed by a slave (644), and a select council appointed Othman, a high official, as third caliph, who was in turn succeeded by Ali, son of Abu Taleb, murdered in 661.

The reign of each of these four rulers had been largely occupied with warfare, and before the death of Ali a new competitor for the caliphate had entered the field in the person of Moâwiya, governor of Syria, who claimed to succeed his cousin Othman, and, having subdued Persia, Syria, Egypt, and Yemen, deposed Ali's son, Hassan, and seized the caliphate.

*Ommiad Caliphs.* — Moâwiya (661-80), who made the title of caliph hereditary, was the first ruler of the line of the Ommiads, and their cap. was Damascus. This dynasty lasted until 750, when it was in turn overthrown by a powerful family (Abbasides) descended from Abbas, uncle of Mohammed.

*Abbasid Dynasty.* — Abûl Abbas (750-4), the first caliph of the line, was followed by his brother, Abu Jaafar Almansôr (754-75), who established the seat of empire at Bagdad; succeeded by his son, Almahdi (775-85); Alhadi (785-6); was followed in turn by Haroun-al-Raschid, 'the Just' (786-809). Of all these potentates by far the most famous is the last mentioned, whose name has been made familiar throughout the world by means

of the *Thousand and One Nights*. Their empire was finally extinguished by the Mongol conquest of Bagdad in 1258.

**Calisthenics.** See under GYM-  
NASTICS.

**Calixtus**, name of three popes : C. I. (217-22), Bishop of Rome and martyr, constructor of catacombs on Appian Way. C. II. (1119-24), displaced the antipope, Gregory VIII.; concluded with emperor, Henry V., the Concordat of Worms. C. III. (1455-8), a Spaniard (Alfonso de Borgia), owed his elevation to Alfonso V. of Aragon; annulled sentence against Joan of Arc.

**Callaghan**, SIR GEORGE (1852- ), Brit. admiral; commanded naval brigade for relief of Peking (1900); commander-in-chief of home fleet (1911-14); commander-in-chief at Nore (1914). In 1917 became one of the five admirals of the fleet. Appointed Bath King of Arms (1919).

**Callander**, mrkt. tn., Perthshire, Scotland (56° 14' N., 4° 12' W.), on both banks of the Teith; centre for Trossachs and a residential town. Pop. 1,500.

**Callao**, chief port, Peru, S. America (12° S., 77° 8' W.), 7 m. W. of Lima; docks and floating dock; modern town some distance from old town (destroyed by earthquake and tidal wave, 1746); starting-point for Oroya Ry.; exports copper, silver, and hides. Pop. 35,000.

**Callcott**, SIR AUGUSTUS WALL (1779-1844), English landscape painter; R.A. (1810); knighted (1827) for his *Raffaello and the Fornarina*, exhibited in 1837.

**Callcott**, JOHN WALL (1766-1821), Eng. composer and organ-

ist; brother of Sir A. W. Callcott; composer of glees and canons; his *Musical Grammar* (1806) was for long a popular work.

**Callernish**, vil. and dist., Uig, Lewis, Scotland (58° 12' N., 6° 42' W.); near by are four stone circles; in centre of largest is a menhir 17 ft. high; there are also two altar chambers.

**Callichthys**. See CAT-FISHES.

**Calligraphy**. See WRITING.

**Callimachus** (c. 310-240 B.C.), Gr. scholar and elegiac poet; keeper of Alexandrian library; his 800 works are mostly lost.

**Calling Crab** (*Gelasimus arcuatus*), African and Japanese crab; male has one great claw much larger than the other, which it holds up as if beckoning; Amer. species called fiddler-crabs; inhabit sandy or muddy shores.

**Calliope**, muse of epic poetry.

**Calliphora**. See HOUSE-FLY.

**Callirhoë**, famous fountain of anc. Athens. In Gr. myth. is a daughter of river-god Achelous.

**Callisthenes** (4th cent. B.C.), Gr. historian; pupil of Aristotle; accompanied Alexander the Great into Asia, and wrote an account of the expedition; also histories of the wars of the period.

**Callisto** (class. myth.), an Arcadian nymph; transformed by Zeus into a she-bear, and, as such, slain by Artemis; afterwards placed in the sky as constellation of the Bear.

**Callitris**, genus of conifers, of fifteen species (Africa, Madagascar, Australia, and New Caledonia), including valuable timber trees. *Widdringtonia juniperoides* is the Clanwilliam cedar, one of the most valuable of S. African timbers. *C. quadrivalvis*



(Morocco and Algeria) probably yielded 'citron wood' of the Romans; produces sandarac resin. *C. verrucosa* yields the similar resin of Australia. The Australian species, *C. calcarata* and *C. glauca*, contain respectively 21 and 12 per cent. of tannin.

**Callot**, JACQUES (1592-1635), Fr. engraver; travelled with gipsy band to Florence; patronized by Cosimo II., and eventually won European fame; his series of engravings, such as *The Miseries of War*, *The Nobles*, *The Gipsies*, describe with Hogarth-like fidelity the manners of his time.

**Calmar**. See KALMAR.

**Calmucks**. See KALMUCK.

**Calne**, munic. bor. and mrkt. tn., Wiltshire, England (51° 26' N., 2° W.), 6 m. E.S.E. of Chippenham; residence of W. Saxon monarchy, 10th cent.; anc. trade in cloth now extinct; bacon-curing industry. Pop. 3,500.

**Calomel** (mercurous chloride),  $Hg_2Cl_2$ , found naturally as the mineral called horn quicksilver, or prepared from a mixture of mercury and corrosive sublimate; a white crystalline powder, heavy and tasteless; used in med. as a purgative, being antiseptic and a bile stimulant.

**Calonne**, CHARLES ALEXANDRE DE (1734-1802), Fr. statesman; minister of finance under Louis XVI.; his proposal to abolish the immunity from taxation of the nobles, magistrates, and clergy was so ill received that the king dismissed and exiled him (1787).

**Calorie** and **Calorimetry**. See under HEAT.

**Calotte**, cap or coif commonly worn over tonsure by Fr. ecclesi-

astics in 15th and 16th centuries; in arch. a flattened dome.

**Calottists**, Fr. 18th cent. satirical society, deriving its name from the calotte (skull-cap) which formed the symbol of the society; towards end of cent. became a military tribunal which was suppressed at Revolution.

**Calpe**, anc. name for rocky headland now known as GIBRALTAR; the northern of the 'Pillars of Hercules.'

**Calpurnia**, childless wife of Julius Caesar; tradition records her pleading with Caesar not to go abroad on fatal Ides of March.

**Caltagirone**, tn., episc. see, Catania, Sicily (37° 14' N., 14° 31' E.), built on two hills (2,015 ft.) linked by bridge; founded by Saracens; pottery and artistic statuettes; favourite residence of Sicilian rural nobility. Pop. 45,000.

**Caltanissetta**. (1) Prov., Italy, in middle of Sicily; sulphur mines from which 500,000 tons exported annually; cereals, wine, olives. Area, 1,263 sq. m.; pop. 343,100. (2) Episc. see and cap. of above (37° 29' N., 14° 3' E.); centre of Sicilian sulphur industry; technical and mining school. Pop. 41,300.

**Caltrop**, small iron ball fitted with sharp spikes; strewn on ground before opposing force in battle to check cavalry charge.

**Caluire et Cuire**, tn., Rhône, France (45° 48' N., 4° 52' E.), on Saône; earthenware; copper and bronze foundries; perfume distilleries. Pop. 10,900.

**Calumet**, tobacco pipe specially known among Algonquin Indians as 'the pipe of peace' owing to its distinctive use at council of

warriors assembled for purpose of concluding peace between opposing tribes.

**Calumpit**, tn., Bulacan, Luzon, Philippines (14° 48' N., 120° 50' E.), in fertile region; burned in war of 1899. Pop. 13,900.

**Calvados**, dep. of Normandy, France, between estuary of Seine on E. and Cotentin on W.; is famous for its pastures; cattle, sheep, and horses; large export trade in dairy produce and cider; fisheries; textiles; seaside resorts. Cap. Caen. Area, 2,197 sq. m.; pop. 396,300.

**Calvaert**, DENIS (DIONISIO FIAMMINGO) (d. 1619), Dutch painter; founder of school of Bologna, master of Guido Reni and Domenichino; painted *Martyrdom of St. Agnes* (Mantua), etc.

**Calvary**, scene of crucifixion of Jesus Christ, situated close to Jerusalem; Heb. Golgotha ('a skull'). A *Calvary*, representation of Crucifixion.

**Calvé**, EMMA (1864—), (EMMA DE ROQUER), Fr. *prima donna* (soprano); first public appearance (1882) in Gounod's *Faust* (Brussels); sang at Covent Garden in *Cavalleria Rusticana* (1892); Massenet's *Sapho* (1897) composed for her; most brilliant success was in *Carmen*.

**Calverley**, CHARLES STUART (1831–84), Eng. poet and scholar; brilliant univ. career both at Oxford and Cambridge; pub. *Verses and Translations* (1862), *Verse Translation of Theocritus* (1869), *Fly-Leaves* (1872). As a writer of light verses and parodies he is unsurpassed.

**Calvert**, G. See BALTIMORE.

**Calvi**, fort. tn. and harbour, N.W. coast of Corsica, France

(42° 34' N., 8° 45' E.); citadel captured by British (1794), when Nelson lost an eye; nearest port of isl. to France (109 m. from Antibes); fishing. Pop. 2,300.

**Calvin**, JOHN (1509–64), Prot. Reformer; b. Noyon (Picardy). Destined for the R.C. Church, he was appointed (1521) to a chaplaincy in the cathedral of his native town. Later he continued his education in Paris, achieving brilliant success in his grammatical and philosophical studies. In 1527 he received the curacy of St.-Martin-de-Marteville, and later that of Pont-l'Évêque, near Noyon. A year later Calvin decided to withdraw himself from the Church, and went to study law at Orléans and later at Bourges. Here also he began to study Greek under Melchior Wolmar, and first imbibed the doctrines of the Reformation. In 1531 he was again in Paris, where, in support of the 'new religion,' he pub. his first book—a Latin commentary on Seneca's *De Clementia* (1532).

Before long, the persecution of the Protestants began, and he had to flee to Basel, where he produced his *Institutes of the Christian Religion* (1536). At twenty-five he had sacrificed all other interests for the Reformed faith, and his influence became very great. In 1536 he moved to Geneva, where he was followed by his chief supporters, and here they issued a Prot. Confession of Faith, through the influence of which a strict morality took the place of loose living. Within two years, however, owing to a reaction against his severe rule, Calvin had to take

refuge in Strasbourg, where he was appointed pastor of a church and prof. of theol. In 1540 he attended the Diet of Worms, and in 1541 that of Ratisbon, where he was introduced to Melanchthon. He returned to Geneva (1541), where, except for a brief interval, he lived for the rest of his life.

Though Calvin's influence now increased year by year, he was continually engaged in fierce controversies with enemies of the new faith, one of the most notable being that with regard to election and predestination with Albert Pighius. Calvinism, in the extreme form which it assumed in the 17th cent., has long been losing ground both in Scotland and in England. Quatercentenary celebrated in 1909.

Walker, *Life* (1906); Penning, *Life and Times* (Eng. trans. pub. in 1912).

#### Calvinistic Methodist Church.

See METHODISM.

**Calvo**, CARLOS (1824–1906), Argentine historian and jurist; wrote a number of books relating to history of the S. Amer. republics; minister at Berlin (1885), and at Paris (1899–1905); pub. *Dictionnaire du Droit International* (1885), etc.

**Calydon**, ancient tn., Ætolia; legendary scene of hunting of Calydonian boar; in one story, adopted by Swinburne, Atalanta took the chief part in the chase.

**Calypso** (class. myth.), daughter of Oceanus; Odysseus, when shipwrecked on Ogygia, of which she was queen, stayed there for seven years. See ODYSSEY.

**Calyx**. See FLOWER.

**Cam**, mechanical contrivance, generally a projecting part of a

wheel, for converting rotary movement of shaft into any required movement of other parts of machine which engages with it.

**Cam**, riv., Cambridgeshire, England (52° 3' N., 0° 8' W.), formerly known as *Granta*, rises near Ashwell (Herts), passes Cambridge, and joins Great Ouse (3½ m. s. of Ely). Length, 40 m. Narrowness of river at Cambridge necessitates university boat racing on 'Bump system.'

**Cam** (or CAO), Diogo, Port. navigator under Alfonso v.; first European to explore the river Congo (c. 1482).

**Camagüey**, former territorial div. of Cuba, comprising four-fifths of present prov. of Puerto Principe; tn. (21° 22' N., 78° 6' W.) and prov. still popularly known by that name. Chief industries cattle raising and sugar planting. Pop. c. 30,000.

**Camaldolese**, or CAMALDULIANS, order of Eremite monks, founded by St. Romuald (c. 950), at Camaldoli, in the Apennines. The monks, who wear a white habit, dwell in separate huts, and only meet together for divine service and for meals. They keep two Lents, abstain perpetually from flesh, and observe silence in all public places. Monasteries still exist in Italy.

**Camaracum**. See CAMBRAL.

**Camarilla**, originally the small or audience-chamber of a king, but the term has come to mean a royal clique, junto, or CABAL of unofficial court intriguers.

**Camargue**, LA, isl., France (43° 20'–43° 42' N., 4° 14'–4° 52' E.), Rhone delta: cereals; vineyards; cattle and sheep rearing; reclamation proceeding. Area, 150 sq. m.

**Cambacérès**, JEAN JACQUES RÉGIS DE, DUKE OF PARMA (1753-1824), French statesman; leaned to side of mercy at trial of Louis XVI.; member of Committee of General Defence (1793); second consul (1799); later made arch-chancellor of France; Duke of Parma (1808); exiled on overthrow of Empire (1816). Under his régime the law was passed under which CAILLAUX was tried.

**Cambaluc** and **CAMBALU**, mediæval names of PEKING.

**Cambay**. (1) Feudatory state, Gujarat, India. Area, 350 sq. m.; pop. 75,000. (2) Port and chief town of above (22° 18' N., 72° 40' E.), on N. bk. of Mahi; declined since silting up of gulf; agate and cornelian ornaments; taken by British (1780); restored to Mahrattas (1783); finally British (1803). Pop. 30,000. (3) GULF OF, between peninsula of Kathiawar and mainland of Bombay; much frequented by Arabs in ancient times; depth been decreasing for many years.

**Camberwell**, metropolitan and parl. bor., S.E. London; chiefly residential; includes Dulwich; S. London Fine Art Gallery; large parks. See LONDON.

**Camberwell Beauty** (*Vanessa antiopa*), large butterfly (wings with spread of 2½ in.); brown shot with purple; four wings have whitish border with inner row of blue spots; larvæ on leaves of poplar, elm, and willow; common to continent of Europe, but rare in Britain.

**Cambist**, person skilled in foreign exchanges; hence, a dealer in bills of exchange.

**Cambodia**, or CAMBOJA, kingdom and Fr. protectorate, Indo-

China, Asia (10° 20'-14° N., 102°-106° 20' E.), bounded N. and W. by Siam, E. by Laos and Annam, S. by Cochin-China and Gulf of Siam. Mainly alluvial plain of Lower Mekong and upper part of delta of that river; Tonle-sap ('great lake') is regulator for Mekong; has important fisheries. Beyond plain, country traversed by outlying ranges of Pnom-Dongrek; coast low with fringe of islands. Cap. Pnom Penh, at beginning of the delta; monsoon climate; in dry season temp. averages 77° to 80° F.; soil remarkably fertile; rice, sweet potatoes, coconut, bread tree, guava, banana; coffee, sugar-cane, pepper, cinnamon, betel, tobacco, indigo, and sugar-palm; cotton industry growing. Iron is only mineral worked; emeralds, rubies; limestone. Staple industry fishing. Ruled by native king under Fr. protection. Inhabitants include Khmers, Chinese, Annamese, Malays, and there are some uncivilized mountain tribes; the chief religion is Buddhism. Cambodia was powerful state under Khmers, attaining its zenith in early mediæval period; various ruins remain of former greatness; Fr. protectorate formally established (1867). Cambodian troops served in Fr. armies during the Great War. Pop. 1,634,000.

**Cambon**, JULES MARTIN (1845-), Fr. diplomat; gov.-gen. of Algeria (1891); ambassador at Washington (1897), Madrid (1902), and at Berlin when Great War broke out; arranged Morocco agreement of 1909 and 1911. In the Fr. Yellow Book he gave a searching analysis of relations

between France and Germany during two or three years preceding the war, and remarked on the psychological change in the Kaiser, who, jealous of his son's popularity, went over to the war party. His interview with Herr von Jagow (July 24, 1914) assured him that Germany was banking on the passivity of Russia in backing Austria against Serbia. Largely due to him that France was prepared when the storm broke. In 1915 general secretary at Fr. Foreign Office; attended Allied conference at Paris (Dec. 1915).

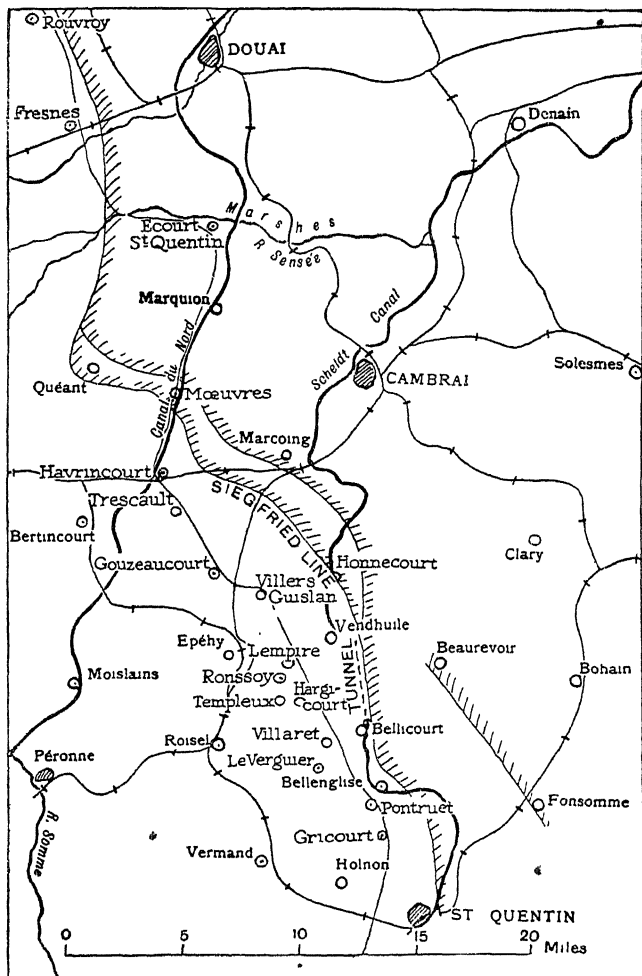
**Cambon, PIERRE JOSEPH** (1756-1820), Fr. financier and statesman; was member of Legislative Assembly (1791), and of Convention (1792). During Revolution proposed to prepare a 'grand livre' of national debt. This plea was set forth in his *Rapport sur la Dette Publique* (1793). In finance he was now supreme, but his independence, his hatred of dictatorship, and protests against excesses of Revolutionary Tribunal incurred hatred of Robespierre; at restoration he was exiled, and died in Belgium.

**Cambon, PIERRE PAUL** (1843- ), Fr. diplomat; ambassador at Madrid (1886), Constantinople (1890), and London (1898-1920). Received from Sir Edward Grey assurance that if Ger. fleet undertook hostile operations against the Fr. coast, the Brit. fleet would afford protection. Did much to cement the *entente* between France and Great Britain.

**Camborne**, mrkt. tn., Cornwall, England (50° 13' N., 5° 18' W.), 3 m. s.w. of Redruth; tin and copper mines. Pop. 15,800.

**Cambrai** (Rom. *Camaracum*), tn., Nord, France (50° 10' N., 3° 12' E.), on r. bk. of Scheldt; important junction on main line of Northern Ry.; linen fabrics (cambrics), also copper working, brewing, distilling, tanning, and soap; seat of archbishop; cathedral of Notre Dame with tombs of Fénelon and Dubois (former archbishops). League of Cambrai formed here (1508). On retreat from Mons British fought delaying battle between town and Le Cateau (Aug. 25-6, 1914); town taken by Germans; an important centre of roads and railways, it became natural base of supplies for the Siegfried line. In Nov. 1917 heavy fighting to the w. during first battle of Cambrai (see below). In final Allied advance the line Cambrai-St. Quentin was of vital importance to the Germans, who defended it desperately; defences broken Sept. 27-9, 1918; entered by Canadian troops and 57th Division (night of Oct. 8-9); badly damaged by retreating enemy; is to be rebuilt by Algiers. Pop. 15,000.

*Battle of Cambrai* (Nov. 20-Dec. 7, 1917).—While Italy was struggling on the Piave and Ger. troops were being moved w. from Russia, Sir Douglas Haig decided to strike in direction of Cambrai while main Ger. forces were concentrating in Flanders. Battle that followed famous for large use made of TANKS with cavalry support; fought by Byng's 3rd Army between Bapaume-Cambrai road and Scheldt Canal, near Banteux; object to pierce defences of Siegfried system of Nord and Scheldt canals for 5 or 6 m. Bournon Wood,



*Situation on the Douai-Cambrai-St. Quentin Front before Haig's Advance on September 27.*

commanding position overlooking w. approaches to Cambrai, was to be surprised, also Marquion, where Arras and Cambrai road and railway cross Nord Canal amidst marshes; cavalry then to break through, but capture of Cambrai no part of original scheme. Tanks concealed in Havrincourt Wood. Battle began 6.20 a.m. on Nov. 20; 180 tanks went forward, followed by infantry and 1st, 2nd, 4th, and 5th Cavalry Divisions. Main Siegfried lines carried; advance made of  $4\frac{1}{2}$  m. Delay at Flesquières and Masnières allowed enemy to send reinforcements, and cavalry did not break through. Flesquières captured following day, and British reached outskirts of Mœuvres and Bourlon Wood; all efforts against Rumilly and Crèvecœur fruitless; original plan had failed, but action continued as infantry battle; reinforcements sent up. Bourlon village and Fontaine-Notre-Dame taken and retaken; towards end of month signs of Ger. counter-attack in strength; Nov. 30, the enemy struck with sixteen fresh divisions, and large part of Brit. line overwhelmed; Germans employing their new 'infiltration' tactics; 29th Division at Gonneaucourt made gallant stand, and Guards Division recovered place; continuous line re-formed; Germans made no further headway. Battle served to divert Ger. troops from Italy. British gained 16 sq. m., including 7 m. of the Siegfried system.

*Battle of Cambrai-St. Quentin* (Sept. 27-Oct. 5, 1918), marked fourth stage of final Brit. offensive that helped to end the Great

War. By Sept. 26 British were again facing portion of Hindenburg system, which Germans had fortified with every known device as their main defence in France. Attack on Cambrai-St. Quentin front part of series of converging offensives from Meuse valley to Flanders. Morning of Sept. 27 right wing of Horne's 1st Army and Byng's 3rd Army opened the attack. In front stretched the Nord Canal, with marshes on either side, and on the far side wide belts of wire commanded by numberless machine guns on the high ridges crossed by Quesnoy Wood and the village of Oisy-le-Verger; Germans held high ground across the Sensée marshes (N. flank of Brit. position). This was captured by 11th Division, which, after crossing canal, spread out fan-wise and carried Oisy-le-Verger and Quesnoy Wood from reverse side. Canadians also crossed, and near Bourlon joined hands with other divisions. Siegfried line carried along the whole front attack; 10,000 prisoners and 200 guns; British now close to Scheldt Canal at Marcoing; this crossed, and only part of Ger. defences now resisting were from Vendhuille to Holnon, with the Scheldt Canal stretching across front, not only difficult obstacle, but a safe shelter for enemy reserves. This section, after most desperate fighting, carried; advance was continued next day, compelling general retreat of enemy behind the Scheldt Canal. On Oct. 1 the French entered St. Quentin. Four more days of ceaseless fighting ensued, in which British, Australians, Canadians,

New Zealanders, Americans, and French in turn won distinction. On Oct. 5 the final line of the 'impregnable' Siegfried system fell; Cambrai had been outflanked, and was entered (night of Oct. 8-9) by Canadian troops of the 1st Army from the N.W., and by the 57th Division of the 3rd Army from the S.

**Cambria**, Lat. name for Wales, derived from the Celtic *Cymru*; originally applied to both Wales and Cymric kingdom of Strathclyde; now restricted to the principality. See WALES.

**Cambrian System**, term applied to the earliest fossiliferous geological system overlying the Archæan or Pre-Cambrian system, the oldest of the geological record, and overlaid by the Silurian system. It derives its name from *Cambria* (i.e., Wales), where it is specially well developed, attaining in places a thickness of 12,000 ft. Outcrops also occur in Shropshire, Warwickshire, Malvern Hills, Cumberland, E. Ireland, and N.W. Scotland. It is met throughout Europe at intervals from Scandinavia to Bohemia, and occupies vast areas of eastern N. America. The Cambrian rocks consist of grits, sandstones, greywackes, quartzites, and conglomerates, with thick groups of shales and slates. In Scotland limestones are prevalent, and in America limestones, greensands, and dolomites, with masses of volcanic rocks.

Fossils are numerous, and, although the earliest discovered forms of life, they show an advanced development pointing to still lower, lost, or undiscovered ancestors. The most character-

istic fossils are the *Trilobites* (Crustacea), *Paradoxides*, *Olenus* and *Olenellus*, and the Brachiopod *Lingula Davisii*, from the Port Madoc slates. The only discovered plants are regarded as *Algæ* (Eophyton). The system in Britain is subdivided as follows:

|       |   |  |
|-------|---|--|
| Upper | { | Tremadoc slates.                               |
|       |   | Lingula flags<br>( <i>Olenus</i> zone).        |
| Lower | { | Menevian series<br>( <i>Paradoxides</i> zone). |
|       |   | Harlech series<br>( <i>Olenellus</i> zone).    |

Sir Archibald Geikie, *Text-Book of Geology*; Jukes-Brown, *Hand-book of Historical Geology*.

**Cambric**, fine linen cloth first manufactured at Cambrai, France. See LINEN.

**Cambridge**, tn., Cambridgeshire, England, on Cam (52° 12' N., 0° 7' E.). Famous as univ. town. Cambridge Univ. is said to have been founded or restored by Sigebert of East Anglia and revived by Edward the Elder; became important early in 13th cent.; obtained papal recognition in 1231. Colleges, in order of foundation, are: (1) *Peterhouse*, founded 1284 by Hugh de Balsham, Bishop of Ely; (2) *Clare*, founded 1326 by Richard de Badew, refounded by Lady Elizabeth, sister of Gilbert, Earl of Clare; (3) *Pembroke*, founded as Valence-Mary Coll. (1347), by Mary de St. Paul, widow of Aylmer de Valence, Earl of Pembroke (Henry VI. was great benefactor to this college, and is called second founder); (4) *Gonville and Caius*, founded 1348 by Edmund Gonville, rector of Terrington—name and situation changed by



William Bateman, Bishop of Norwich, who was second founder (third founder was John Caius, M.D., who in 1558 obtained royal charter establishing his foundation); (5) *Trinity Hall*, founded 1350 by William Bateman, Bishop of Norwich; (6) *Corpus Christi*, founded 1352 by two societies, the Guilds of Corpus Christi and of Blessed Virgin Mary; (7) *King's*, founded 1441 by Henry VI.; (8) *Queen's*, founded 1448 by Margaret of Anjou, queen of Henry VI.—re-founded by Elizabeth Woodville, wife of Edward IV., 1465; (9) *St. Catharine's*, founded 1473 by Robert Wodelarke, D.D., chancellor of univ.; (10) *Jesus*, founded 1496 by John Alcock, Bishop of Ely; (11) *Christ's*, founded 1505 by Lady Margaret, Countess of Richmond and Derby, mother of Henry VII.; (12) *St. John's*, founded 1511 by the same; (13) *Magdalene*, founded 1519 by Thomas Baron Audley of Walden; (14) *Trinity*, founded 1546 by Henry VIII., by combining and extending two earlier foundations—Michaelhouse (1324) and King's Hall (1337); (15) *Emmanuel*, founded 1584 by Sir Walter Mildmay, chancellor of exchequer; (16) *Sidney Sussex*, founded 1594 under will of Frances, Dowager Countess of Sussex; (17) *Downing*, founded 1800 by Sir George Downing. There are two women's colleges, *Girton* and *Newnham*. Pop. 40,000.

**Cambridge.** (1) City, Massachusetts, U.S. (42° 23' N., 71° 5' W.), seat of Harvard Univ. (1636), Harvard Observatory, Radcliffe Coll., and Prot. Episc. Divinity School; also important indus-

trial interests. Pop. 104,800. (2) Tn., Maryland, U.S. (38° 34' N., 76° 5' W.); oyster and herring fisheries. Pop. 6,400. (3) Tn., Ohio, U.S. (40° 6' N., 81° 32' W.); manufactures pottery and glass. Pop. 11,300.

**Cambridge, EARLDOM AND DUKEDOM OF.** Title dates back to Norman times, and was almost invariably bestowed upon members of the reigning house. It lapsed in the person of George II., but was revived in 1801 and bestowed on ADOLPHUS FREDERICK, Duke of Cambridge (1774–1850), 7th son of George III., who was also Earl of Tipperary and Viceroy of Hanover. His son, GEORGE WILLIAM FREDERICK CHARLES (1819–1904), present at Alma, Balaklava, Inkerman, and Sevastopol; was field-marshal in 1862; general commanding-in-chief (1856–87); commander-in-chief (1887–95). See *Memoir* by Sheppard (1906). The present holder of the title MARQUESS OF CAMBRIDGE (cr. 1917) is eldest son (b. 1868) of late Duke of Teck and Princess Mary Adelaide; constable of Windsor Castle since 1914; served in S. African War, and was military secretary G.H.Q. in early part of 1916.

**Cambridge Greensand**, green sandy marl crowded with vast numbers of phosphate nodules at the base of the chalk in Hertfordshire and Cambridgeshire, England; nodules (miscalled coprolites), source of artificial manures.

**Cambridgeshire**, inland co., England (52° 15' N., 0° 10' E.), bounded N. by Lincoln, E. by Norfolk and Suffolk, S. by Essex and Hertford, and W. by Bed-

ford, Huntingdon, and Northampton. Greatest length, 48 m.; breadth, c. 30 m.; area, 553,219 ac. Surface is generally flat, except in s. Chief rivers are Ouse, Cam, Nene, and Lark: intersected by canals. Chiefly an agricultural co. Chief towns, Cambridge (the cap.), Newmarket, Wisbech, and Ely. Traces of Roman occupation still remain; suffered during civil wars of Stephen, John, and Henry III.; supported Parliament against Charles I. The co. returns one member to Parliament, Cambridge city one, and the univ. two. Pop. 130,000.

**Cambridgeshire.** See RACE MEETINGS.

**Cambridgeshire Regiment.** The official existence of this regiment under present title only dates from 1909; originated in the 3rd Cambridge Volunteer Batt. of the Suffolk Regiment (designation prior to S. African War, 1st Cambridgeshire) and 4th Cambridge Univ. Vol. Batt. of same regiment (2nd Cambridgeshire). These battalions, after fighting in S. African War, were converted into the Cambridgeshire Regiment, solely a Territorial unit.

1915.—1st Batt. was amongst earliest Territorial battalions to go to France; in March in Ypres area; took part in fighting near St. Elloi just after battle of Neuve Chapelle; later in local actions and raids during second battle of Ypres (April 22 to May 24), especially near Hill 60; specially mentioned in French's dispatch of June 15 for fine reconnaissance by a patrol.

1918.—Best performance of 1st

Batt. in second battle of Somme, where it fought gallant rearguard action at Biaches (March 26). Later in battle of Lys (April) fought on St. Elloi-Wytschaete front against best Ger. troops. At battle of Amiens (Aug.). With Rawlinson's 4th Army, heavily engaged on the Morlan-court-Sailly-le-Sec front; rendered valuable but costly aid in capture of Chipilly, key to Bray. In battles of Bapaume and Cambrai-St. Quentin; concluded war record by fighting in the Flanders battle (Oct.) in La Bassée region, fighting with distinction near Flers and astride the Scarpe.

**Cambuscan**, a semi-fabulous prince of Cambulac (or Sarra), in Tatar, whose story Chaucer 'left half told' in his *Squire's Tale*. Spenser treats the tale in *Faerie Queene*, bk. iv.

**Cambuskenneth** ('field of Kenneth'), ruined abbey, on riv. Forth, 1 m. E. of Stirling, Scotland; founded 1147; first Scots Parliament containing representatives of burghs (1326); James III. and his queen, Margaret of Denmark, interred here; remains discovered, and reinterred under altar monument at command of Queen Victoria (1865).

**Cambuslang**, tn. and par., l. bk. Clyde; residential suburb of Glasgow (55° 48' N., 4° 10' W.); one of largest steel works in kingdom; turkey-red dyeing and brickmaking. Pop. 15,000.

**Cambusnethan**, par. and vil., Mid-Lanarkshire, Scotland (55° 47' N., 3° 56' W.); coal and iron; birthplace of Lockhart, Scott's biographer. Pop., including part of Wishaw burgh, 36,900.

**Cambyses**, son of Cyrus the

Great, founder of Persian Empire; succeeded his father c. 529 B.C., conquered Egypt in 525, and after an unsuccessful attempt against Ethiopia, died in Syria. The name has become associated with a bombastic style.

**Camden.** (1) City, New Jersey, U.S. (39° 56' N., 75° 6' W.), on I. bk. of Delaware, opposite Philadelphia; large commercial and manufacturing centre; iron foundries, chemical and glass works, etc.; shipbuilding. Pop. 94,500. (2) Tn., S. Carolina, U.S. (34° 17' N., 80° 38' W.); popular winter resort; scene of battle between Brit. force under General Cornwallis and Amer. militia under Gates; latter defeated (Aug. 16, 1780).

**Camden, CHARLES PRATT, 1ST EARL** (1714–94), lord chancellor of England; through Pitt's influence became attorney-general; knighted (1762), and made chief justice of the Common Pleas; president of Council, second Rockingham administration; raised to peerage (1786); chiefly remembered for his bold championing of John Wilkes.

**Camden, WILLIAM** (1551–1623), Eng. antiquary and historian; headmaster Westminster School (1593); Clarendieux king-at-arms (1597); commissioned by James I. to translate into Latin the Gunpowder Plot trial reports; great work, the *Britannia*, a survey of Brit. Isles (in Latin, trans. into Eng. 1610); wrote also *Remaines concerning Britain*, and *Annales of Queen Elizabeth's Reign*.

**Camden Town.** See LONDON.

**Camel**, appliance for raising sunken ships in shallow water; consists of large hollow vessels

filled with water and attached to sides of ship; water pumped out and ship raised by buoyancy of empty vessels.

**Camel Corps.** The mounting of infantry on camels greatly increases its mobility; and though the men actually fight on foot, they can also perform the scouting and reconnoitring duties of cavalry and mounted infantry in hot, sandy, and badly-watered countries, where the horse cannot be employed with advantage. Camel corps are especially useful for making sudden raids. On an emergency a camel can travel from 70 to 80 m. per day, carrying his rider with sufficient food and water for a week. Camel corps have been constantly formed of European troops when operating in India, Afghanistan, Egypt, and the Sudan. The Egyptian camel corps is a permanent branch of the Egyptian army. The men are Sudanese, Arabs, and fellahin. Units of the Egyptian camel corps, strengthened by detachments from the Imperial Camel Corps, assisted in raids on the Hedjaz railway during the summer of 1918.

**Camel Family** (Camelidae), includes camels and llamas, and forms by itself the group Tylopoda among even-toed Ungulates (Artiodactyla). They are long-necked, long-limbed, and large-bodied animals, with only the third and fourth digits persisting. The place of hoofs, which are poorly developed, is taken by thick pads of skin. Camels and their relatives ruminate, but the first and second compartments of the stomach are peculiar in having pouches in

their walls, wherein fluid can be retained and used at will. They differ from all mammals, and resemble the lower vertebrates in possessing oval instead of circular red-blood corpuscles.

Only two species of *Camelus* exist—the two-humped Bactrian camel (*C. bactrianus*), still found wild in the desert area of Central Asia, and the wholly domesticated Arabian camel or dromedary (*C. dromedarius*), with a single hump of fat, found throughout Africa and S.E. Asia. In S. America occur the llamas (*Lama*), valuable on account of their wool, and also two wild species, the larger guanaco or huanaco and the smaller vicuña; and the domesticated true llama and alpaca.

**Camel-flies.** See art. on SNAKE FLIES.

**Camelford**, mrkt. tn., Lanteglos, Cornwall, England (50° 57' N., 4° 40' W.); was anc. bor.; tourist centre; traditionally associated with King Arthur, and supposed by some to be Camelot; cheese factory; clay works; slate quarries. Pop. 7,400.

**Camellia**, order Ternstroemiaceae, evergreens; includes greenhouse species *C. japonica*, parent of most of our garden forms, *C. reticulata* (introduced from China) and *C. oleifera*.

**Camelodunum**, anc. name for COLCHESTER.

**Camelot**, in Arthurian legend seat of King Arthur and the Round Table; variously identified with Caerleon (Monmouthshire), Winchester, Camelford (Cornwall), and Camelon, near Falkirk (Scotland).

**Cameos.** See GEM.

**Camera**, word meaning an

'arched room,' and applied to private rooms in court, whence 'in camera,' the private hearing of a case; criminal cases may not be so heard, nor may adult persons be ordered out of court during a public hearing.

**Camera Lucida**, an optical instrument used for making outline sketches of an object.

**Camera Obscura**, a darkened chamber, having aperture, furnished with lens and mirror, through which light enters and forms images of external objects on surface opposite; referred to in Bacon's *De Augmentis Scientiarum*. See also PHOTOGRAPHY.

**Camerarius**, RUDOLF JAKOB (1665–1721), Ger. physician and botanist; laid foundation of sexual theory of plants in *Epistola de sexu Plantarum* (1694).

**Camerino** (anc. *Camerinum*), tn., episc. see., Macerata, Italy (43° 8' N., 13° 5' E.); seat of 'free' univ. (founded 1727) with 500 students. Pop. 12,000.

**Cameron**, SIR CHARLES (1841– ), Brit. journalist and politician, ed. *North British Daily Mail* (1864–74); M.P. for divisions of Glasgow (1874–1900); carried resolution which led to sixpenny telegrams; he carried Inebriates Acts, abolition of imprisonment for debt in Scotland, and reforms in connection with Scot. licensing laws; baronet (1893).

**Cameron**, DAVID Y. (1855– ), Scot. painter and etcher; A.R.S.A. (1904) and R.S.A. (1918); A.R.A. (1911) and R.A. (1920); his pictures and etchings are to be found in many public galleries at home and abroad; with William Strang, illustrated with etchings *The Compleat Angler* (1902); com-

plete Catalogue of his etched work by Frank Rinder (pub. 1912).

**Cameron, Sir DUNCAN ALEXANDER** (1808-88), Brit. general, only son of Sir John Cameron; was brigadier in Crimea; he was commander-in-chief in Scotland (1860), and commander of forces which defeated Maoris in New Zealand (1863). Reverses in 1864 and differences of opinion with the governor, Sir George Grey, led to his resignation (1865); general in 1874; governor of Sandhurst (1868-75).

**Cameron, VERNEY LOVETT** (1844-94), African traveller: was first to cross Africa from E. to W.; pub. *Across Africa* (1877), and, with Sir Frederick Burton, *To the Gold Coast for Gold* (1883).

**Cameron of LOCHIEL, Sir EWEN** (1629-1719), Highland chieftain; head of clan Cameron; knighted (1681); served with Dundee at Killiecrankie (1689). *Memoirs* by Drummond (1842).

**Cameron Highlanders, Queen's Own**, originally 79th Foot, raised by Alan Cameron in 1793. Battle honours up to the Great War: Egmont-op-Zee; Corunna; Busaco; Fuentes d'Onor; Salamanca; Pyrenees; Nivelle; Nive; Toulouse; Peninsula; Waterloo; Alma; Sevastopol; Lucknow; Tell-el-Kebir; Egypt (1882); Nile (1884-5); Atbara; Khartum; South Africa (1900-2). During the Great War the regiment was composed of three regular and special reserve battalions (including the Highland Light Infantry Militia); two T.F. battalions (4th, and 10th Lovat Scouts), three service battalions (5th, 6th, and 7th), Labour Batt. (9th), Home Service Batt.

(8th), and the allied regiment of Canadian Militia (79th Cameron Highlanders) of Canada. 1st Batt. replaced 2nd Munsters early in Sept. 1914 in the 1st Brigade of original B.E.F.

1914.—1st Batt. in the battle of the Aisne; near Pilkem in the Ypres salient (Oct. 22-3), when it revealed extraordinary proficiency in marksmanship; in Homeric struggle at Krusik cross-roads at end of Oct., when Kaiser was present in person; fought with high valour (Nov. 12-13) during attack of Prussian Guard on front from Klein Zillebeke to Zonnebeke.

1915.—2nd Batt. in India when war broke out; fought in France in some of early battles of this year; afterwards sent to Salonica. 4th Batt. suffered heavily at Festubert (May) and along with 5th, 6th, and 7th Batts., fought at Loos (Sept.). After the battle, the 4th Batt. had so few survivors that it was disbanded.

1916.—5th, 6th, and 7th Batts. in battle of Somme; Longueval and Delville Wood (July); 1st Batt. in advance of 1st Division near High Wood and Delville Wood, losing heavily; won success in operations leading to capture of Martinpuich (Sept.); 2nd Batt. on Struma front in Sept., during Bulgarian invasion of Macedonia; assisted in capture of Karadjakoi Bala.

1918.—7th Batt. in front line with 44th Highland Brigade in Henin sector during tremendous fighting on Somme (March); made resistance absolutely vital to safety of Arras; enemy by sheer weight of numbers forced his way into centre of Brit. line

N. of Cambrai, where 6th Batt. fought with desperate courage. 5th Batt. bore a distinguished part (end of March) in fighting around St. Pierre Vaast. In early autumn, when tide had turned, Camerons were conspicuous in attacks of 15th Scots Division at Buzancy in conjunction with the French. Later, other units of the Camerons took part in attack on Hindenburg Line (between Le Catelet and St. Quentin) with Rawlinson's 4th Army. 1st Batt. was conspicuous in great battle of the Sambre (Nov.).

**Cameronians**, sect of Scottish Covenanters, later known as Reformed Presbyterians, founded by Richard Cameron (1648-80). Name also given to 26th Regiment of Foot, the Cameronian Regiment, raised in Scot. Lowlands in 1688. See under regimental name, SCOTTISH RIFLES.

**Cameroon**. See KAMERUN.

**Camiling**, SAN MIGUEL DE, tn., Tarlac, Luzon, Philippines (15° 40' N., 120° 27' E.); timber, rice, maize, cotton, and sugar-cane. Pop. 25,200.

**Camisards**, Huguenot peasants of the Cevennes, who rose in rebellion (1702) against persecutions following revocation of Edict of Nantes. Derived name from uniform of white shirt (*camise*). See NANTES, EDICT OF.

**Cammaerts**, EMILE, Belgian poet and author; settled in England in 1908; has trans. several vols. of Ruskin into French, and is author of *Belgian Poems* (1915), *New Belgian Poems* (1917), *Mes-sines and other Poems* (1918).

**Camoens** (or CAMÕES), LUIS DE (1524-80), Portugal's greatest poet; b. Lisbon, of noble descent;

graduated at Coimbra Univ., of which he was an 'honourable poor student'; removed to Lisbon at age of eighteen, and fell in love with Donna Caterina de Ataide, a lady of the court, but her father forbade their union. Camoens remained true to her till her death. He passionately celebrated his love in *Rimas*. Banished from Lisbon for a time, he entered the army, and for over two years was at Ceuta, where he lost the use of his right eye in a skirmish.

He returned to Lisbon in 1550, and, finding no employment, he seems for three years to have led a disorderly life; was imprisoned for assault upon a royal servant, and was only released upon volunteering for service in India. After seeing Caterina for the last time, the poet shipped for Goa in 1553, and did not return to Portugal for sixteen years. During this period of foreign service Camoens wrote his masterpiece, *The Lusads*, on the explorations of Vasco da Gama. The poem appeared in 1572, and was an immediate success. But the remainder of Camoens's life was passed in poverty, and he died of plague in a public hospital.

Burton, *Camoens: Life and his Lusads* (1881).

**Camomile**, or CHAMOMILE, medicinal herb (*Anthemis nobilis*), common in Britain; the dried flowers, made into 'camomile tea,' possess excellent tonic and stomachic properties.

**Camorra** (Span.), a secret society which arose in S. Italy during the Bourbon misgovernment of Naples. Mainly composed of the poorer criminal

classes, banded together to evade and defy the law, it also included associates from the upper classes, who furthered their own lawless schemes by its aid. Extortion, smuggling, and brigandage led to more serious crimes; members bound by oath of secrecy and under stern discipline; Liborio Romano, last Bourbon minister of the interior, in league with them; rebellion of 1860 carried through largely with help of Camorra; worst excesses curbed after the union of the Two Sicilies with Sardinia. In 19th cent. assumed aspect of political party; secured munic. control of Naples. Ital. Government interfered (1899-1901), and in 1911 arrested leaders and brought them to trial. In 1912 eight of them were sentenced to thirty years' imprisonment, and the others to shorter terms.

**Camouflage** (Fr. *argot*), introduced as a military term during the Great War, signifies disguise with a view to concealment and deception of the enemy; also the means or material, manufactured or natural, used for the purpose. Forms of camouflage were familiar to ancient and mediæval armies, and some of them foreshadowed the modern methods. During the long period of trench warfare in the Great War camouflage was practised as a fine art, not only to counter observation at the extremely close ranges of the opposing trenches, but also from aircraft attempting to take aeroplane photographs. Surface indications, inconspicuous from the ground, are clearly visible in expert examinations of these photographs, and it is specially

noticeable that the shadows of trees or hedges are sharper than their actual foliage. Ideal camouflage should therefore reproduce the appearance of the surface which it covers in colour, form, and texture, and should avoid unnatural regularity in the creation of light and shadow—extremely difficult to achieve under service conditions. But imperfect camouflage is better than none, as it renders targets less easy to discover and less distinct when discovered; it also forces ranging aeroplanes to descend to heights where they can be seriously distracted by gunfire from the ground.

*Infantry*.—The forward observation posts and embrasures of machine-gun emplacements were camouflaged by the use of imitation bricks or sandbags with gauze-covered holes, let into parapets or the ruined walls of trenches. Loose suits painted green were provided for snipers; in night raids faces of men were blacked, and white was worn when snow was on the ground. Important trenches were camouflaged, and communication trenches roofed with turf.

*Artillery*.—Framework of wire or fish netting decorated with imitation grass or foliage was used for concealing batteries; painted sheets for covering spoil, ammunition, or stores. Field batteries were more difficult to conceal, and the scheme was decided on by reference to aeroplane photographs. Landscape was frequently altered by heightening hedges or walls, or making false crests to hide movements of ammunition or flashes of the guns.

Blast marks were concealed by sheets, removed during firing, and by other devices. Heavy guns were sometimes placed amidst imitation ruins or fields of cultivation. Most guns were painted in such a way as to break up the shape of the weapon by blending parts of it with the surroundings; the colours were usually green, cream, and brown.

*Lines of Communication* were concealed by screens of painted canvas or strips of canvas, branches, or grass on framework of wire, usually placed at some distance from edge of road; such screens often extended for many miles. Protective painting was also applied to huts, camps, aeroplanes, and dumps behind the lines. For concealing the movements of troops on a grand scale camouflage was reinforced by other methods, such as marching only by night, rigidly avoiding the formation of new tracks, and dummy preparations elsewhere.

*Sea Warfare.*—Q-boats were used to deceive German submarines; steamers and sailing ships employed for the purpose carried concealed guns, and were manned by men of the royal navy, who in dress and demeanour appeared to be merchant seamen. 'Panic parties' abandoned ship when submarine appeared, and the deception was continued until she was within easy range, when the guns were unmasked. 'Dazzle painting' was carried out on an extensive scale so as to deceive the enemy as to the course and speed of the target ship.

*Dummy Work.*—Wooden dummies of the battle-cruiser *Tiger* and the battleship *Collingwood*

were used at the Dardanelles, where the dummy *Tiger* was sunk by a torpedo, and the crew floated off on one of the turrets. These dummies were intended to deceive the enemy as to location of their originals. Dummy periscopes were towed behind submerged submarines. Dummy batteries, with artificial flashes, were used by the Turks, and were sited some distance from the real guns. Wooden howitzers, dummy heads, dummy periscopes, and dummy figures of men ('Chinese infantry') were also used to deceive the enemy. Screens were often used which concealed nothing.

*Open Warfare.*—During the moving warfare in 1918 camouflage was of little or no account, owing to the rapid change of positions, and batteries and brigades of artillery frequently went into action in line in the open, as in 1914, without any camouflage, natural or artificial.

**Camp** (Lat. *campus*, 'plain'), in modern use, applied to a temporary tented settlement, as opposed to bivouac; anc. Roman camps (*castra*) were strong, permanent forts, usually built on an eminence. They were laid out in a symmetrical way like the Roman town into which the permanent camps (*castra stativa*) often developed. The camp formed a great square of just over a mile, and was bounded by mound (*agger*), surmounted by palisade (*vallum*); the cavity formed by throwing up the mound was part of the fortification—viz., the ditch (*fossa*). The tents, separated from the fortifications by the *intervallum*, were divided into



two parts by the *Via Principalis*, at either end of which were the principal issues from the fort; on one side were the officers' quarters with the *Prætorium* in the centre, on the other side the legions; from the *Prætorium*, on the *Via Principalis*, the *Via Prætoria* traversed the soldiers' quarters (in the midst of which it was intersected by the *Via Quintana*) to the *Porta Prætoria*.

In the modern sense a camp is the resting-place of troops under improvised cover, such as tents or huts. Troops halting without cover are said to be in 'bivouac.' In modern warfare troops usually bivouac or billet in whatever houses are available, thus reducing number of tents to a minimum. Camps are now only formed on active service where troops are halted for a considerable time without being in immediate contact with the enemy, in which case hutting is resorted to—as, e.g., at advanced bases where rest camps are formed. Camps of tents are largely used when troops on home service are trained in the summer.

*Camps of exercise* are permanent military stations established for training purposes, with barracks and huts and provision for additional accommodation under canvas. British camps of exercise are at Aldershot, Salisbury Plain, Colchester, Shorncliffe, Strensall (Yorkshire), Stobs (near Hawick), and the Curragh (in Ireland).

**Campagna.** (1) Tn., episc. see, Salerno, Italy (40° 40' N., 15° 6' E.). Pop. 9,000. (2) C. DI ROMA, plain extending for over 100 m. round Rome; almost entirely volcanic; traversed by Tiber;

barely one-tenth cultivated, because of malaria; used for winter pasturage of sheep; horses and buffaloes are reared; drainage and reclamation, planting of eucalyptus, extinction of mosquito pest, are in progress.

**Campanella**, TOMMASO (1568–1639), Ital. philosopher and poet; was for some time a Dominican; attempted reform of philosophy; opposed Scholasticism, relying rather upon ancient systems, and devoted to study of nature; imprisoned twenty-seven years as rebel against Span. tyranny in Naples, and detained by Inquisition; liberated in 1629; found a patron in the Pope, and later in Richelieu; sonnets trans. into English by J. A. Symonds (1878).

**Campania.** (1) Territorial div. of Italy (modern provs. Avelino, Benevento, Caserta, Naples, and Salerno); dense agricultural pop.; portion drained by Volturno richly fertile; Falernian wines; sulphur. Oscans, Etruscans, Samnites, and Romans successively predominant. Area, 6,290 sq. m.; pop. 3,348,000. (2) Cunard liner (600 ft. long, gross tonnage 12,952, speed 22 knots, accommodation for 2,236 passengers); was rechristened *Engadine*, and employed as sea-plane carrier during the Great War. It did good work at the battle of Jutland.

**Campanile** (Lat. *campana*, 'a bell'), large bell-tower belonging to, but usually detached from, a church; they are found throughout Italy, the most noted being Giotto's Tower (Florence), St. Mark's (Venice), and the 'leaning tower' of Pisa. Giotto's campanile, built 1334, stands 275 ft.

high, is in five stories, the outer surface being encased in three colours of marble, and it was originally intended that a spire 90 ft. high should rise from the present summit. Still loftier (396 ft.) is Cremona campanile.

**Campanology**, the art of bell-ringing. See **BELL**.

**Campanula** (Lat. *campana*, 'bell'), genus of plants of family Campanulaceæ, having bell-shaped corolla; several species called *Canterbury Bell*.

**Campbell**, Scot. Highland clan, probably a Celtic tribe. From Duncan, Lord Campbell (cr. 1445), have descended the Marquesses and Dukes of ARGYLL, the Earls and Marquesses of BREADALBANE, and the Earls of CAWDOR.

**Campbell**, ALEXANDER (1788–1866), Amer. evangelist; founded sect known as Disciples of Christ, or Campbellites (1809). They reject all creeds and confessions, derive their religious views exclusively from the N.T., perform baptism by immersion, and have developed into a powerful denomination in U.S., with a membership of over 1,000,000.

**Campbell**, SIR COLIN, BARON CLYDE (1792–1863), Brit. soldier; as commander-in-chief during Indian Mutiny, he cleared Lower Bengal, relieved Lucknow, pacified N. India, and organized successful campaign in central districts. For services was created field-marshal, raised to peerage, and received pension.

**Campbell**, JOHN CAMPBELL, BARON (1779–1861), Lord Chancellor of England; wrote *Lives of the Lord Chancellors of England* (7 vols. 1849), also *Lives of the Chief Justices of England*.

**Campbell**, JOHN FRANCIS (1821–85), Scot. writer, known as 'Campbell of Islay'; author of *Popular Tales of the West Highlands* (1860–2), and *Book of the Fians* (1872), best collection of genuine Gaelic tales and ballads.

**Campbell**, JOHN M'LEOD (1800–72), Scot. evangelist and author; wrote his important *Nature of the Atonement* (1856), and *Thoughts on Revelation* (1862).

**Campbell**, LEWIS (1830–1908), Scot. class. scholar; renowned for his trans. from Plato, Æschylus, and Sophocles.

**Campbell**, MRS. PATRICK (1865–), Eng. actress; first success at Adelphi Theatre (1892); she created the part of *Second Mrs. Tanqueray* (1893) at St. James's. Has played with Beerbohm Tree, Forbes-Robertson, and Sarah Bernhardt. Toured U.S. in 1901, 1907, 1910, and 1914. Created Eliza Doolittle in *Pygmalion*, by Bernard Shaw (1914), and George Sand in *Madame Sand* (1920).

**Campbell**, REGINALD JOHN (1867–), Eng. preacher; succeeded Dr. Parker at City Temple (1903); published two books on *Immanence* (1917) which aroused controversy; visited U.S. (1911); entered Church of England (1915); vicar of Christ Church, Victoria Street, London, since 1917.

**Campbell**, THOMAS (1777–1844), Scot. poet, b. at Glasgow; went to Edinburgh, where Sir Walter Scott, Jeffrey, and John Leyden were amongst his contemporaries. His most ambitious poem, *The Pleasures of Hope*, appeared in 1799. Its success was immediate, but it is now forgotten. Campbell was a laborious writer. He will live by

virtue of his patriotic lyrics, of which 'Ye Mariners of England' and 'The Battle of the Baltic' are amongst the finest in the language. *Life*, by Beatty (1849), Hadderf (1899); Logie Robertson, ed. *Complete Works* (1903).

**Campbell - Bannerman**, SIR HENRY (1836-1908), Brit. statesman; M.P. for Stirling Burghs from 1868 to death; financial secretary to War Office (1870-4), and again (1880-2); secretary to Admiralty (1882-4); chief secretary for Ireland (1885). In Gladstone's Home Rule government of 1886 he was secretary for war, and again in 1892, under Rosebery's premiership, when the government was defeated on the cordite vote (June 21, 1895). Strongly disapproved of Boer War, which caused split in Liberal party and formation of Liberal League under Rosebery; leader of Liberal party in House of Commons (1889). His attitude on S. African War won him much unpopularity, but after crushing defeat of the Unionists (1906) he became prime minister. Chief features of his administration were granting of constitution and responsible government to Transvaal, and prohibition of further importation of Chinese labour. Resigned April 1908, and died three weeks later. A popular party leader, courageous, sincere; of 'pawky' humour.

**Campbeltown**. (1) Tn., port, royal burgh, Argyllshire, Scotland (55° 26' N., 5° 37' W.); ship-building; whisky distilling; fisheries. Pop. 7,000. (2) Tn., S. Australia, 5 m. E. of Adelaide, of which it is a suburb (35° S., 138° 45' E.); pop. 1,800. (3) Munic.

tn., New S. Wales, Australia (34° 4' S., 150° 46' E.). Pop. 2,200.

**Campeachy**. (1) State, Yucatan, Mexico, consists of over 18,000 sq. m. of low, unhealthy land, producing rice, sugar-cane, tobacco, and logwood (campeachy wood); pop. 85,800. (2) Tn., seapt., and cap. of above (19° 48' N., 90° 32' W.), with harbour not suited to large vessels; exports logwood, hemp, cordage, wax, hides, cocoa, and salt; cigars; pop. 19,000. (3) BAY OF, S.E. part of Gulf of Mexico to the W. of Yucatan peninsula.

**Campeggio**, LORENZO (1464-1532), Ital. cardinal; was made Bishop of Salisbury by Henry VIII., and was also Archbishop of Bologna; chiefly notorious for his connection with the divorce of Catherine of Aragon.

**Camper**, PETER (1722-89), Dutch anatomist, prof. of med., surgery, and anat. at different universities in Holland; discovered auditory organs in fish (1761), and anatomical differences between man and orang-utan.

**Camperdown**, stretch of dunes in N. Holland, off which Admiral Duncan won victory over the Dutch under de Winter (Oct. 1799); memory preserved in navy by battleships *Camperdown* (1885) and *Duncan* (1901).

**Camphausen**, OTTO VON (1812-96), Prussian statesman; minister of finance (1869); warm advocacy of free trade principles resulted in conflict with Bismarck and caused his retirement.

**Camphausen**, WILHELM (1818-85), Ger. artist; famous for his battle pictures, many of his subjects being taken from 17th cent. history; also portraits of modern Ger. celebrities.

**Camphene.** See the art. under TERPENES.

**Camphors,** chemical compounds used in manufacture of celluloid, and in med. *Laurel Camphor* ( $C_{10}H_{16}O$ ) is volatile, white, crystalline, semi-transparent; m.p.  $175^{\circ}C$ , b.p.  $204^{\circ}C$ , soluble in alcohol and ether; obtained from wood of *Cinnamomum camphora* of China, Japan. See also BORNEO CAMPHOR.

**Campinas,** one of finest cities of the state of São Paulo, Brazil ( $22^{\circ} 55' S$ ,  $47^{\circ} 5' W$ ); cathedral, school of art, munic. buildings, theatre; fertile dist.; sugar, cotton, coffee. Pop. 25,000.

**Campion, EDMUND** (1540–81), Eng. Jesuit, took orders in the Church of England, but openly recanted Protestantism in 1571 and joined the Society of Jesus; was sent with Robert Parsons to conduct a mission in England (1580), and drew crowds to his meetings; executed at Tyburn; beatified 1886.

**Campion, THOMAS** (1567–1620), Eng. poet and musician; his several *Bookes of Ayres* (words and music by himself) constitute his title to be considered in the front rank of Jacobean lyric poets; also wrote number of masques.

*Songs and Masques*, ed. by A. H. Bullen (1903); *Complete Works* (Clarendon Press, 1908).

**Camp Meetings,** religious gatherings held in temporary encampments, and usually continued for about a week. Originated with Methodist Church in America (1799); introduced into England by Hugh Bourne, but discountenanced by authorities, whereupon Bourne and his

followers hived off and formed Primitive Methodists.

**Campoamor y Campoosorio,** RAMON DE (1817–1901), Span. poet; secured reputation by short poems which he called *doloras humorades* or *pequeños poemas*, in which humour and philosophy are blended.

**Campobasso.** (1) Prov., Italy, forming part of Abruzzi and Molise; sheep and cattle rearing; wheat, maize, wine, olives, hemp; cutlery, paper, hats, and silk. Area, 1,700 sq. m.; pop. 349,000. (2) Cap. of above ( $41^{\circ} 34' N$ ,  $14^{\circ} 42' E$ ); cutlery; museum with Samnite weapons; pop. 14,300.

**Campobello.** (1) Tn., Girgenti, Sicily ( $37^{\circ} 15' N$ ,  $13^{\circ} 54' E$ ); has sulphur mines; pop. 12,000. (2) Tn., Trapani, Sicily ( $37^{\circ} 38' N$ ,  $12^{\circ} 43' E$ ); huge stone quarries (abandoned 409 B.C.); pop. 9,000. (3) Island, Bay of Fundy, New Brunswick ( $44^{\circ} 55' N$ ,  $66^{\circ} 55' W$ ), at the entrance to Passamaquoddy Bay; 8 m. long; summer resort; pop. c. 1,200.

**Campo Formio,** tn., N. Italy ( $46^{\circ} 1' N$ ,  $13^{\circ} 11' E$ ); treaty between Austria and France signed here (1797).

**Campomanes, PEDRO RODRIGUEZ, CONDE DE** (1723–1802), Span. statesman and economist; sometime president of the Council of Castile; pub. *Discurso sobre el Fomento de la Industria Popular* (1774); was founder of Spanish National Bank, and opened ports to foreign trade.

**Campos.** (1) Tn., state of Rio de Janeiro, Brazil ( $21^{\circ} 55' S$ ,  $41^{\circ} 12' W$ ), connected with Rio de Janeiro by the Leopoldina Railway; well laid out; electric tramways; exports sugar and

coffee; pop. c. 30,000. (2) Tn., state of Sergipe, Brazil (11° 14' s.); district produces tobacco, coffee, sugar, and cereals; pop. of tn. and dist. 11,000.

**Campos**, ARSENIO MARTINEZ DE (1831–1900), Span. general, who restored Alfonso XII to Span. throne; during minority of Alfonso XIII. was trusted adviser of queen-regent.

**Campo Santo** ('the sacred plain'), a cemetery in Italy and Spain laid out with artistic taste. Pisa has famous Campo Santo; with wall space of arcades covered with frescoes by early painters (Giotto, Orcagna, Benozzo Gozzoli); that of Genoa has fine sculptures.

**Campulung**, or KIMPOLUNG, cap. dep. Muscel, Rumania (45° 15' N., 25° 3' E.), at foot of outlying Carpathian hills; summer resort; first cap. of Wallachia; capture by Germans (autumn 1916) gave them rich oil district further E. Pop. 13,000.

**Canaan** ('low lands'), name applied first to coast regions of Palestine and dist. drained by Jordan; later given to whole of Palestine w. of Jordan.

**Canaanites**, general term often applied in O.T. to the heathen peoples dwelling between Jordan and Mediterranean; they worshipped Astarte, and sacrificed children in their heathen rites.

**Canada**, British overseas Dominion, covering all the northern half of North America except ALASKA and NEWFOUNDLAND (41°–52° N., 57°–141° W.); it includes long fringe of islands in N. and N.E., stretching towards Pole; bounded N. by Arctic Ocean, E. by Atlantic and New-

foundland, S. by U.S., W. by Alaska and Pacific Ocean.

The E. coast is broken up by Hudson Strait and Bay, James Bay, Gulf of St. Lawrence, Bay of Fundy; importance of first three as harbours lessened by ice in winter, of last by height of tides and strength of tidal currents; W. coast much broken, fringed with islands; N. coast commercially useless on account of latitude; S.E. is cut up by chain of great lakes—biggest fresh-water area in world; largest are Lakes Superior and Huron.

Along E. coast, by Labrador, Cape Breton I., and Nova Scotia, are low hills; while S.E. of St. Lawrence basin is bounded by northern extension of Appalachians, with height of c. 4,000 ft. Along N.W. of St. Lawrence basin, of Great Lakes, and of their northern feeders, stretch Laurentian Plateau and Laurentian Range, with heights of from 1,000 to 3,000 ft. From N.N.W. to S.S.E., towards Pacific coast, run Rocky Mountains and parallel Selkirk and Cascade Ranges, with great intervening valleys and with average height of c. 8,000 ft.; highest peaks, Mts. Hooker (15,700 ft.), Murchison (15,789), Brown (16,000). Between Laurentian Range, N. of Lake Superior, and foothills of Rockies, is enormous stretch of fertile prairie land, important for wheat growing and stock rearing; districts E. and W. of this are in many parts densely wooded. The N. is partly plateau, partly plain, valuable for minerals and fur-bearing animals. The great northern and north-eastern stretch drained by Upper Yukon;

Mackenzie, Coppermine, Great Fish or Back rivers, flowing to Arctic; Churchill, Nelson, Albany, entering Hudson Bay; E., S., and centre drained by St. Lawrence and its tributaries (Ottawa, etc.), Red R., Assiniboine, Saskatchewan; S.W. by Fraser and upper waters of the Columbia. Climate varies greatly; is generally one of extremes. Temp. in centre ranges from 44° to 88° F.; rainfall sufficient everywhere. Extreme length c. 2,100 m., width 3,600 m.; area, c. 3,730,000 sq. m.

There are many sources of wealth. Central district is one of the great wheat areas of the world; cattle rearing, fruit growing, dairying are important industries; has great quantities of timber; extensive fisheries—lobster, salmon, herring, cod, mackerel; mineral deposits are valuable, including gold, coal, copper, nickel, silver, petroleum, asbestos, lead, iron. Exports include lumber, cheese, cattle, wheat, flour, bacon, fish, apples, skins, furs, sheep, butter, eggs, beef, paper, wood pulp, leather, etc.; the imports—textiles, machinery, iron and steel manufactures, clothing, salt, coal, chemical products, etc. Canada has system of protection, but there is a preferential tariff in favour of U.K. and some of her colonies. Railway mileage in 1917 was 38,604, and is rapidly extending; Canadian Pacific Ry., running from Montreal to Vancouver, not counting innumerable branches, has a length of 2,903 m., and was opened in 1885; other leading lines are National Transcontinental, Cana-

dian Northern, and Grand Trunk Pacific from Moncton, New Brunswick, to Prince Rupert on Pacific coast (begun 1904, with government aid, and completed 1914). Besides navigable rivers and great lakes, there is fine system of canals; shipping is of great importance. Telegraphic and postal communications are good; forty-nine radio-telegraph stations in 1917.

*History.*—About A.D. 1000 some Norse explorers from Greenland established in Canada a settlement whose situation is unknown; but they were soon overwhelmed and their settlement destroyed by Indians, who remained in undisputed possession until the coming of European explorers late in 15th cent. John Cabot was first to reach E. coast of Canada in 1497, and his son Sebastian afterwards carried out further explorations. First settlements, however, were made by French; great part of coast was explored by corsair Verrazano in 1524, and ten years later Cartier formally annexed country in name of Fr. king, exploring St. Lawrence R. in 1535. The colony he tried to establish, with the aid of Lieut.-gen. Roberval, proved a failure, as also were later settlements made by Marquis de la Roche in 1598 and by Chauvin and Pontgravé in 1599. In 1603 Samuel de Champlain received royal charter, and in 1604 he, with Sieur de Monts, established settlement at St. Croix, afterwards removed to Port Royal in Acadia; in 1608 he founded Quebec, and later a trading centre at Montreal, and discovered several lakes. His

support of the Hurons against Iroquois in 1609 and 1615 excited hostility of latter to France, so that when, later on, war broke out with England they supported Eng. arms.

In 1613 Port Royal was plundered and burnt by the Eng. seaman Argall, but was later rebuilt. In 1621 English made attempt at settlement in Acadia, calling it Nova Scotia. In 1625 first Jesuit missionaries came to Canada, and for some time exercised great influence in conduct of affairs. Richelieu established Company of New France in 1627, to which management of affairs in Canada was entrusted. English took Port Royal in 1628, Quebec in 1629; but in 1632, by Treaty of St. Germain-en-Laye, these, with the whole of Acadia, were restored to France. Champlain, who had been taken prisoner by English, returned to Canada in 1633, acting as governor until his death in 1635. Permanent settlement was made at Montreal in 1642, one of founders, Laval, becoming Bishop of Canada and head of Church. In 1654 Acadia was again captured by British, but it was restored to France by Treaty of Breda, 1667. Meantime management of Company of New France came to an end, their charter being cancelled by Louis xiv. in 1663, when Canada became a crown colony. Administration was now carried out by the government, assisted by intendant and supreme council. First governor, de Mézy, came to loggerheads with Bishop Laval, and was ordered to France, but died suddenly. For a time de

Tracy acted as viceroy, and reduced Mohawks to submission. Frontenac, who became governor in 1672, was unrivalled in his treatment of the Indians; during his administration Mississippi was explored, and English made further settlements in Hudson's Bay and other districts. He was recalled in 1681; his successor, Denonville, was guilty of treachery towards the Iroquois, who in revenge organized terrible massacre of La Chine (1689). The recall of Denonville followed, and Frontenac returned.

Meantime English made an alliance with Iroquois; suspecting which, Frontenac sent parties of Indians and French to attack Eng. settlements; several massacres occurred, and Eng. colonists determined on war. War lasted, except for short truce in 1697, until 1713, when it ended with Treaty of Utrecht, whereby Canada, Isle Royal, and St. John's I. remained to France, and Britain obtained Nova Scotia, Newfoundland, and Hudson Bay Territory. Formal establishment of Brit. government took place (1719). Period of peace ensued, during which French fortified Cape Breton. After outbreak of war between France and Britain this was taken by British in 1745, but was restored to France in 1748 by Peace of Aix-la-Chapelle. Before long relations again became strained, and in 1755 all Fr. Canadians were expelled from Nova Scotia by Brit. governor, Lawrence. War broke out soon afterwards, and lasted till 1763. French under Montcalm had most success in the first two years, took Oswego

and Fort William Henry; but later tide turned in favour of British, who took Louisburg in 1758 and afterwards captured Prince Edward I. In 1759 Quebec fell to Brit. force commanded by Wolfe, who was killed in action; soon afterwards Montreal surrendered; and in 1763 peace was concluded by Treaty of Paris, whereby whole of Canada was ceded to Great Britain and declared Brit. province, Murray becoming governor.

Canada and Nova Scotia did not join in rising of Amer. colonies against mother-country in 1776, and had no share in War of American Independence. In 1791 the Constitutional Act was passed, dividing old prov. of Quebec into Upper and Lower Canada, each with its own governor. Discontent broke out in Lower Canada, and friction between Fr. and Brit. inhabitants. In 1812 occurred war with U.S., which lasted till 1814. In 1837 Fr. rising in Lower Canada was repressed, and in 1841 Upper and Lower Canada were reunited, while Nova Scotia and other maritime provinces still had separate governments. In 1867, by the Brit. North American Act, federal union was formed by Upper and Lower Canada, Nova Scotia, and New Brunswick, as Dominion of Canada, which was joined in 1871 by Brit. Columbia, and in 1873 by Prince Edward I.; Hudson Bay Territory had been acquired in 1869.

In 1869-70, and again in 1885, occurred risings among Fr. half-breeds, causes of which were partly racial, partly religious, the mutineers fearing that the Fr.

language and R.C. religion would be superseded; leader was Louis Riel, who after suppression of second rising was tried and executed. Dispute with the U.S. concerning fishery rights was settled by treaty (1888), and in 1892 a treaty was arranged between Canada, U.S., and Great Britain concerning sealing in Bering Sea; further disputes on this subject were settled by award in 1897, in which year also occurred the great rush to Klondike consequent on discovery there of gold. In 1896 Manitoba was agitated by religious education disputes, which were settled by arrangement; and in this year Laurier became first R.C. premier. In 1898 a conference met at Quebec on question of Alaskan boundary, which was finally defined by treaty with U.S. in 1903. Pacific cable to Australia was completed (1902). New provinces of Alberta and Saskatchewan were created out of N.W. Territories in 1905; in 1912 Ungava was assigned to Quebec, and N.W. Territories s. of 60° n. were divided between Ontario and Manitoba.

The *Dominion* was formed by confederation between 1867 and 1873 of all the Brit. N. Amer. colonial possessions, except Newfoundland and coast strip of Labrador between Hudson Strait and Gulf of St. Lawrence forming part of that colony. Executive consists of gov.-gen., representing Brit. crown, and privy council; legislature vested in Parliament of two houses, Senate and House of Commons, former having 96 and latter 235 members. Senators are nominated for life by



government; Commons elected for five years by popular vote. The nine provinces, Ontario, Quebec, Brit. Columbia, Nova Scotia, New Brunswick, Manitoba, Alberta, Saskatchewan, and Prince Edward I., have each a lieutenant-governor and Parliament, and administer their own local affairs (see FEDERATION). The chief religion is Roman Catholicism, though Methodism, Presbyterianism, and Anglicanism have large followings. Education (which is under provincial control) is free and compulsory, and there are 22 universities, one or more in each prov. (see UNIVERSITIES). Militia service is compulsory between ages of 18 and 60. From time to time proposals have been put forward for the establishment of a Royal Canadian Navy, which will probably be organized in the near future, to guard Atlantic and Pacific coasts.

Inhabitants include Brit., Fr., and other European nationalities, Indians, and Chinese. Immigration continues with great rapidity; in 1912-13, 402,432 settlers arrived, the greatest number of whom came from U.S. and the U.K. There are some 1,600,000 French-speaking Canadians, and over 110,000 Indians. Pop. 8,361,000.

Bramley-Moore, *Canada and her Colonies* (1911); Griffith, *Dominion of Canada* (1911); Hurd, *Canada* (1918); Porritt, *Evolution of the Dominion of Canada* (1918).

CANADA AND THE GREAT WAR.  
—(1) *General*. Immediately war was declared Canada placed her whole resources at the disposal

of the mother-country. Conscription was introduced in 1917. From first to last she raised over 550,000 troops for active service, of whom 400,000 were sent overseas. Her casualties were 190,000 (44,000 killed or died of wounds). Besides fighting men, she sent munitions, ships, and food to Europe. By 1916 nearly 500 munition factories were in operation, and 62,000,000 shells were sent overseas. Lumber in vast quantities and aeroplanes (2,500) and aeroplane parts were constructed; 450 m. of railways were torn up and dispatched to France. Increased efforts were made in food production (valued at \$187,011,000 in 1914-15, and at \$710,619,400 in 1917-18). She also raised five war loans, and also made advances to Great Britain (mother-country's indebtedness at close of war \$230,000,000). Voluntary organizations of all kinds raised total of \$90,000,000. During war all provinces but Quebec prohibited sale of intoxicants (prohibition general on May 1, 1919).

*Naval*.—Canada's two war vessels, *Niobe* (cruiser, 11,000 tons) and *Rainbow* (light cruiser, 3,600 tons), did useful service in Pacific and Atlantic; fleet of trawlers and drifters sent overseas; 2,000 native Canadians enrolled for naval service; large shipbuilding programme undertaken by government—12 submarines, 60 armed trawlers, 100 armed drifters, 550 patrol boats, and special boats for operations on Tigris, as well as supply of similar craft for France and Italy. Forty mercantile steamers of from 3,000 to 10,000 tons were

authorized for building; several launched before Armistice.

(2) *Military*.—1st Canadian Div. was sent across in early autumn of 1914; followed by 2nd Div., which arrived in France Sept. 1915; third formed Feb. 1916; fourth, Aug. 1916, by which time Canada had four divisions and a cavalry brigade in Europe. In 1918 total number in France nearly 150,000.

In the following battles Canadian troops won special distinction:

*Second Battle of Ypres* (April 22, 1915): 1st Div., though gassed and terribly assailed, barred the way to Calais and the Channel ports.

*St. Eloi* (April 1916): 2nd Div. bore brunt of operations during long struggle for crater and trench positions.

*Sanctuary Wood and Hooge* (June 13, 1916): 3rd Div. recaptured Mount Sorrel Observatory by brilliant counter-attack.

*First Battle of Somme* (Sept. and Dec. 1916): all four divisions took prominent part in taking Courcelette (Sept. 15), and 4th Div. captured Regina trench N. of Courcelette (Dec.).

*Vimy Ridge*, captured by Canadian Corps (April 9, 1917), one of most fruitful successes of the whole war; *Hill 70*, captured Aug. 15, 1917; *Passchendaele*, captured Nov. 6. *Amiens front*: made record advance of 22,000 yards in attack of Aug. 8, 1918.

*Arras-Cambrai Battle* (begun Aug. 26, 1918): advanced 23 m., fighting for every foot of ground. During this period carried five formidable trench systems, including Drocourt-Quéant switch

(Hindenburg Line), and crossed Canal du Nord (casualties in these actions 30,000). In final stage captured Douai, Valenciennes, Denain, and Mons. In Mons' on Armistice Day.

**Canada Balsam**, kind of turpentine obtained from balsam fir (*Abies* or *Pinus balsamea*), native of Canada and N. part of U.S.; used for varnishes and for mounting microscopical objects.

**Canadian River**, also called Red R., rises near Raton in New Mexico, U.S.: forms boundary for distance between Oklahoma and Indian Territory; joins Arkansas R. (35° 28' N., 95° 3' W.) at Tamaha. Length, 900 m.

**Canal**, artificial waterway for navigation purposes, drainage, or irrigation, the term usually being restricted to channels for navigation. Canals were used by the Egyptians, Chinese, and other Eastern nations long before Christian era, these early canals being mostly all at one level. The progress of the canal was slow until the introduction, in the 14th or 15th cent., of the *lock*. A lock consists of a watertight chamber closed at each end by gates, and separating two reaches of a canal. By means of sluices this chamber can be filled to the level of the upper reach, or emptied to the level of the lower, so that barges can be admitted from either reach and raised or lowered to the level of the other. The time and water expended in passing through locks has caused them to be replaced on many canals by other devices, such as two iron chambers filled with water and exactly balancing one another.

One chamber rises as the other descends, thus raising or lowering a vessel as required. The water-supply of a canal is kept up by natural or artificial reservoirs, water-weirs being provided to take any excess. Stop-gates divide the canal into sections which can be emptied separately for repairs.

Among famous canals are the *Bridgewater Canal* (Worsley to Manchester), opened 1761, the first great canal in England; *Manchester Ship Canal* (Manchester to Eastham on the Mersey,  $35\frac{1}{2}$  m., cost nearly 13½ millions sterling), opened (1894) by Queen Victoria; vessels can enter or leave it at half-tide; has minimum bottom width of 120 ft., depth of 26 ft.; Eastham locks have 20 ft. on sill at low water, rising to 36 ft.; crossed in a swing aqueduct (opened for passage of masted vessels) by *Bridgewater Canal*; *Kaiser Wilhelm Canal* (Kiel to Baltic, 70 m.); width being increased to 144 ft. and depth to 36 ft. for latest battleships; *Amsterdam Ship Canal* (Amsterdam to North Sea,  $16\frac{1}{2}$  m.). See SUEZ CANAL; PANAMA CANAL.

**Canal du Nord.** See NORD, CANAL DU.

**Canale** (or CANALETTO), ANTONIO (1697–1768), architectural painter of Venice, who possessed power of reproducing what he saw with accuracy almost photographic. National Gallery, London, has ten of his Venetian pictures; other examples are in the Wallace Collection, and at Edinburgh and Dublin.

**Canal Zone,** strip of land, 47 m. long by 10 m. wide, on either

side of the Panama Canal from the Atlantic to the Pacific Ocean; bought from Panama (1904) by U.S. for £2,000,000 and annual rental of £50,000. By Panama Act government of the zone vested in several departments all under direction of a governor (first governor, Col. G. W. Goethals, builder of the canal). U.S. have drained swamps, dealt with sewage, and effectively screened all government buildings from mosquitoes, and by so doing have so greatly reduced malaria and other diseases that health rate of zone compares favourably with that of U.S.

**Cananga**, genus of small trees (Anonaceæ) native to Eastern Asia and Australasia; flowers of *C. odorata* yield by distillation ylang-ylang oil, used in perfumery; most of this oil comes from Manila in Philippines.

**Cañar.** (1) Prov., tableland of Ecuador, S. America; agriculture and manufacture of Panama hats; numerous Inca remains. Area, 1,520 sq. m.; pop. 64,000. (2) Tn. of above prov. ( $2^{\circ} 33' \text{ s.}$ ,  $79^{\circ} 2' \text{ w.}$ ); ruins of Inca castle; cereals and potatoes. Pop., including dist., 14,000.

**Canary Islands**, group of volcanic islands ( $27^{\circ} 45' - 29^{\circ} 15' \text{ N.}$ ,  $13^{\circ} 30' - 18^{\circ} \text{ W.}$ ) belonging to Spain, off N.W. coast of Africa, 62 m. from mainland. There are seven large islands, La Palma, Hierro, Gomera, Tenerife, Grand Canary, Fuerteventura, Lanzarote; area, c. 2,808 sq. m. Climate is delightful; lowest temperature,  $48^{\circ}$ , highest,  $95^{\circ} \text{ F.}$ ; rainfall moderate; favourite place of residence for invalids. Islands produce onions, fruits

(bananas, etc.), cochineal, wine, tobacco, vegetables; all exported. Imports include cottons, woollens, coal, flour, machinery, timber, hardware, etc. Chief town is Las Palmas, Grand Canary. Great conical peak of Teneriffe (12,198 ft.) is visible 140 m. off. Pop. 419,800.

Brown, *Madeira and Canary Islands* (1901); Pitard and Proust, *Iles Canaries* (1909).

**Canberra**, cap. in course of construction for Commonwealth of Australia, on branch of Murrumbidgee R., 150 m. s.w. of Sydney and 75 m. from coast (35° s., 149° e.); operations begun 1913; up to 1915 £691,000 spent on it; foundation stone laid by Prince of Wales in course of Australian tour (1920); military college (160 cadets) established in Federal area (583,000 ac., with 18,000 ac. at Jervis Bay, where naval college (87 cadets) has already been set up).

**Cancellaria**. See article on GASTEROPODA.

**Cancer**, or CARCINOMA, a malignant growth originating from epithelium—i.e., the cellular tissue covering a surface or lining a tube or cavity of the body; it is most frequently found in the skin, in various parts of the alimentary canal, in the breast, or the womb, and the urogenital system generally. A cancer has no definite limits, and may infiltrate all the tissues in its vicinity, while it is also liable to spread by the lymphatic vessels and veins and cause so-called secondary growths in different parts of the body.

Since 1792, when the first cancer wards were established at

the Middlesex Hospital, London, investigation of the causes and cure of cancer has made great progress, and numerous institutions in various parts of the world are devoted to this work, prominent among them the Cancer Research Institute, London, directed by Dr. Bashford. Yet, although several theories have been put forward, the cause of cancer is not yet exactly known; for one authority considers that cancer cells are embryonic cells accidentally shut off, another that they are fragments of reproductive tissue, another that the connective tissue has lost its ability to hold the proliferation of the cancer cells in check, another that their growth is caused by a parasite; but none of these theories has been proved beyond doubt. The only treatment is to remove by surgical operation the growth and the tissues around, lymphatic vessels in connection with it, and all lymphatic glands in the vicinity, it being safer to cut away too much rather than too little. It is believed that cancer is increasing, for reasons which are not fully understood, although the eating of meat, and particularly tinned meats, is suggested as a cause.

The chief varieties of cancer are: *scirrhous*, a hard and very fibrous type; *encephaloid*, a soft, cellular cancer, which grows rapidly; *squamous epithelial*, growing from surfaces, such as the skin and mucous membrane of the mouth and oesophagus, which have a particular type of covering cell-layer; *columnar epithelial*, growing from a different type of covering cell—e.g.,

of stomach; *rodent*, originating in the glands of the skin.

**Cancer**, a northern (and the 4th zodiacal) constellation, chiefly noted for containing the cluster *Præsepe* (or the 'Beehive'), which, next to the Pleiades, is the most conspicuous star cluster in the heavens.

**Candace**, hereditary title of queens of Meroë in Upper Nubia; specifically applied (1) to Queen of Sheba who visited Solomon, (2) to a queen who twice invaded Egypt and was twice defeated by Roman general Petronius, and (3) to the Queen of Ethiopia, whose treasurer Philip converted to Christianity (Acts 8: 27).

**Candahar**. See KANDAHAR.

**Candelilla Wax**, excretion on all parts of *Euphorbia cerifera* (Mexico); obtained by cutting up plant, enclosing it in wire cloth, and subjecting it to action of steam. Made in factories at Monterey; used as substitute for Carnauba wax in making boot polishes, sealing wax, insulating materials, varnishes, etc.

**Candia**, largest town of CRETE (35° 20' N., 25° 8' E.), on small artificial harbour (much silted); trades in island produce, chiefly olive oil and raisins; founded 823 by Saracens on site of Gr. *Herakleion*; contended for by Saracens, Byzantines, Genoese, and Venetians, and held by last for over four hundred years; intermittently besieged by Turks (1648-69). During Cretan troubles of 1898, Brit. consul treacherously attacked, and Turks forced to remove troops from island; CROSSUS 3 m. distant. Pop. 25,200 (Greek, with a few Moslems, Jews, etc.). See CRETE.

**Candidate** (Lat., 'white robed,' Roman candidates being thus arrayed), any one who offers himself or is put forward for election or appointment to some post. For parliamentary candidates, see ELECTIONS.

**Candle**, rod of tallow, wax, or like matter surrounding a wick, and used for lighting purposes; tallow seems to have been the earliest substance used, and candles made from it are mentioned by Apuleius; wax candles were used by the Romans; in the Middle Ages, both in London and Paris, the business of candle-making gave rise to two distinct guilds—the Wax chandlers and the Tallow chandlers.

**Candle Fish**. See SALMON FAMILY.

**Candlemas**, festival held Feb. 2 to commemorate the Presentation of Christ in the Temple. The custom of blessing the candles for the whole year on this day came into use in the 11th cent.

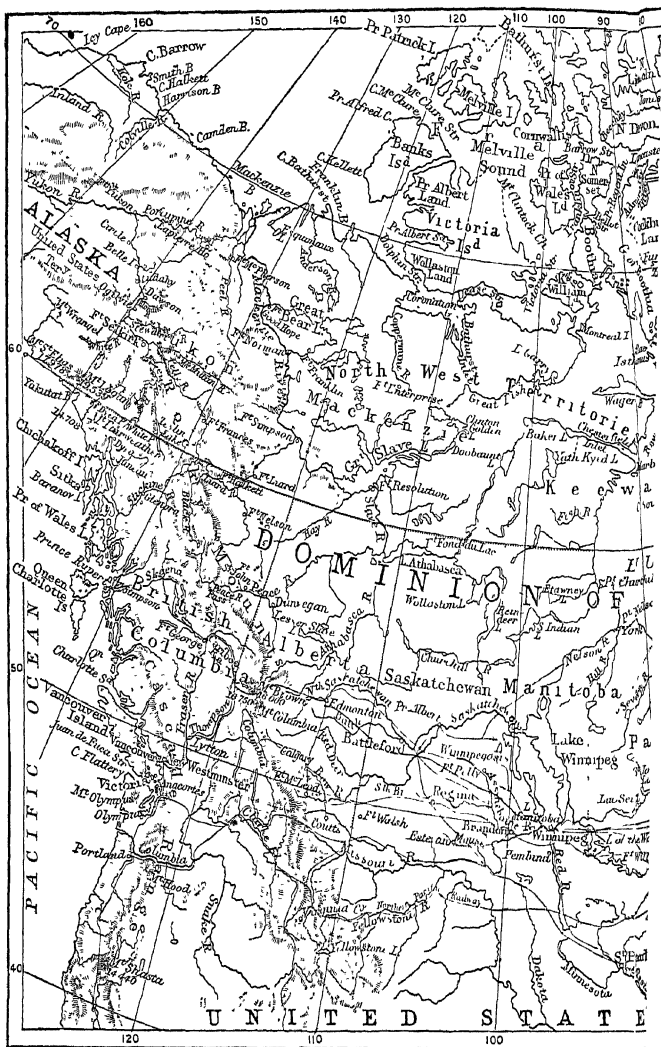
**Candle-nut**, or CANDLEBERRY (*Aleurites triloba*=*A. moluccana*), evergreen trees of order Euphorbiaceae, growing wild in Pacific islands; nuts rich in oil, extracted for food and light, and for drying oil used by painters. Nuts strung together used as torches for fishing; dye from the fruit, lamp-black from shell.

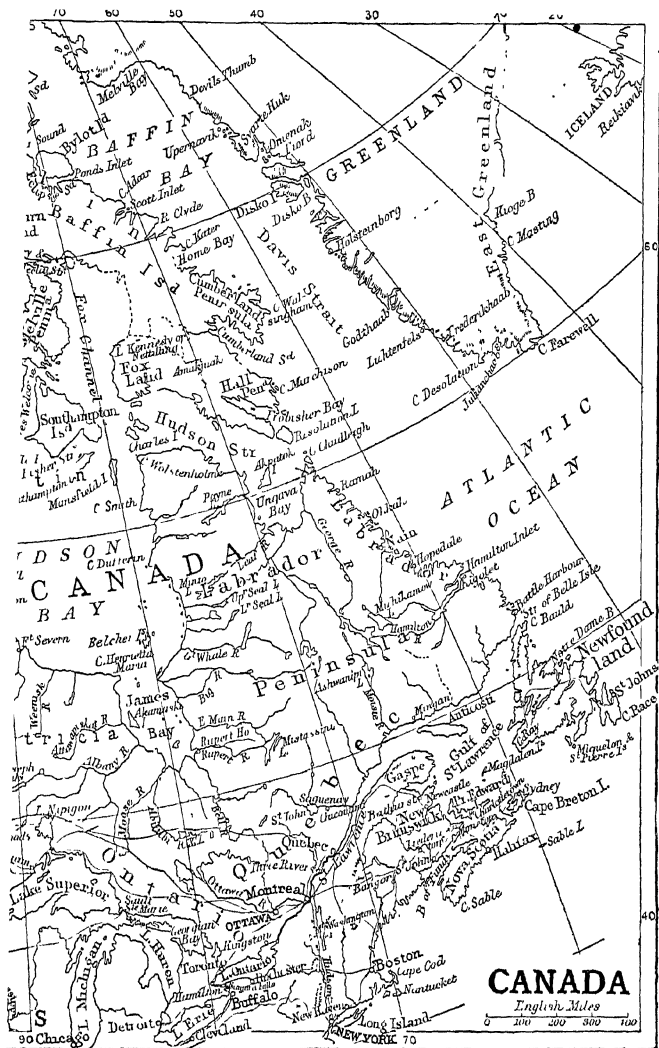
**Candlish**, ROBERT SMITH (1806-73), Scot. theologian; minister of St. George's, Edinburgh; occupied chair of divinity at New Coll., Edinburgh, and was some time principal; one of leaders of the party which, after Disruption (1843), became known as the Free Church of Scotland.

**Candon**, tn., S. Ilocos, Luzon,



SCALING THE BANKS OF THE CANAL DU NORD, SEPT. 1918.









CANTERBURY CATHEDRAL

Philippines ( $17^{\circ} 11' \text{ N.}$ ,  $120^{\circ} 28' \text{ E.}$ ); second largest town in prov.; large trade in indigo, rice, and tobacco; cotton, silk, and woollen goods. Pop. 20,000.

**Candy.** See **KANDY**.

**Cane**, name applied to certain small palms, as well as to varieties of the larger grasses—*e.g.*, bamboo and sugar-cane, with slender, reedlike stem; strictly speaking, should only be given to rattans (*Calamus*, *Dæmonorons*, etc.); used for baskets, chairs, etc., in East. Canes used as stakes in gardens are bamboos.

**Canea**, cap. of Crete, on N. coast ( $35^{\circ} 31' \text{ N.}$ ,  $24^{\circ} \text{ E.}$ ); cramped by Venetian walls; European quarter 1 m. E.; small artificial harbour (much silted); soap and oil; Gr. *Cydonia*, held by Venetians and taken by Turks (1645). Suda Bay, 4 m. E., was frequently used as naval anchorage by powers during Cretan troubles. Pop. 24,400.

**Canelones**, southerly dep., Uruguay, S. America; next to Monte Video most populous and important dep. of republic; centre of agriculture and viticulture; cattle and sheep breeding. Cap. Canelones or Guadalupe ( $34^{\circ} 33' \text{ S.}$ ,  $56^{\circ} 16' \text{ W.}$ ). Pop. of cap. 9,000.

**Cang.** See **CANGUE**.

**Cangas de Onis**, tn., Oviedo, Spain ( $43^{\circ} 23' \text{ N.}$ ,  $5^{\circ} 9' \text{ W.}$ ); founded early 8th cent. by Pelagius, who began Christian conquest of Spain in neighbourhood; abbey; copper and carbonate of zinc; coal. Pop. 8,500.

**Cangas de Tineo**, tn., Oviedo, Spain ( $43^{\circ} 11' \text{ N.}$ ,  $6^{\circ} 32' \text{ W.}$ ); woollen and linen industries; leather and pottery. Pop. 23,000.

**Cangue**, or **CANG**, Chin. instrument of punishment, a kind of wooden cage fitting closely round neck; weight proportioned to gravity of crime; offence and name of criminal inscribed on cangue; worn in the open street.

**Canicatti**, tn., Girgenti, Sicily ( $37^{\circ} 22' \text{ N.}$ ,  $13^{\circ} 50' \text{ E.}$ ), 15 m. N.E. of Girgenti; sulphur mines; technical school. Pop. 25,000.

**Canicula**, see **CANIS MAJOR** for Sirius (the dog-star); *Canicular days*, the dog-days, days in hottest period of year when Sirius used to rise just before sun; but this conjunction does not, owing to precession of the equinoxes, now come in dog-days.

**Canidæ.** See **DOG FAMILY**.

**Canis Major** (Lat., 'Greater Dog'), constellation visible in s. sky during winter; supposed to be one of the dogs of Orion the Huntsman, the other being *Canis Minor*. Canis Major is chiefly remarkable because it contains Sirius, the dog-star, the brightest star visible from the northern hemisphere; distance calculated to be about 47 billion miles.

**Canker Worms**, caterpillars of two species of geometer moths (*Anisopteryx*), which do much harm to the leaves of fruit and other trees in U.S.

**Cannæ**, anc. vil., Apulia, Italy ( $41^{\circ} 18' \text{ N.}$ ,  $16^{\circ} 7' \text{ E.}$ ); scene of Hannibal's victory over Romans (216 B.C.).

**Cannanore**, or **KANANUR**, seapt., Madras, India ( $11^{\circ} 51' \text{ N.}$ ,  $75^{\circ} 25' \text{ E.}$ ); exports grain, timber, and coco-nuts. Pop. 28,000.

**Cannes**, health resort, Alpes-Maritimes, Riviera, France ( $43^{\circ} 32' \text{ N.}$ ,  $7^{\circ} 1' \text{ E.}$ ), 20 m. S.W. of Nice; sheltered and equable

climate; popularized by Lord Brougham, who settled here (1836); many Brit. visitors; perfume distilling. Pop. 29,600.

**Cannibalism**, or ANTHROPOPHAGY, custom of eating human flesh; held by some writers to have been habit of primitive man, but on this point there is much divergence of opinion. So advanced a race as the Aztecs of Mexico were addicted to cannibalism; and in modern times the New Guineans, the Battas of Sumatra, and the Maoris of New Zealand were much given to the practice. In Polynesian Islands the custom was rampant, but has been practically stamped out by the efforts of missionaries.

**Canning**, process of preserving meat, fish, fruit, etc., by encasing it in cylindrical tin cans and expelling air; tin then hermetically sealed. This is followed by 'processing,' which sterilizes contents, and consists of heating the cans up to temp. of 170°-250° F., thus destroying harmful bacteria.

**Canning**, CHARLES JOHN, EARL (1812-62), British Conservative statesman, son of George Canning; under-secretary for foreign affairs (1841); postmaster-general (1853); gov.-gen. of India (1856) during Mutiny.

**Canning**, GEORGE (1770-1827), Eng. statesman, whose father claimed descent from the famous Bristol merchant, William Canynge; educated Eton and Oxford; entered Parliament as member for Newport, Isle of Wight (1794); under-secretary of state (1796); made reputation as orator (1798) by his speeches in support of abolition of slave trade; treasurer of navy

(1804); foreign secretary (1807); president of Board of Control (1816); foreign secretary and leader of House of Commons (1822); prime minister, in succession to Lord Liverpool (1827); one of the most brilliant and witty orators of his time.

Marriott, *Canning and his Times* (1903).

**Canning**, SIR STRATFORD. See STRATFORD DE REDCLIFFE.

**Cannock**, mrkt. tn., Staffordshire, England (52° 42' N., 2° 2' W.); tile making, edge tools, coal mining. Pop. 28,600. *Cannock Chase*, between Lichfield and Stafford, formerly wooded dist., devoted to hunting and more recently to army manoeuvres; now a heath, with Coal Measures and ironstone below the coal.

**Cannon**. See ARTILLERY.

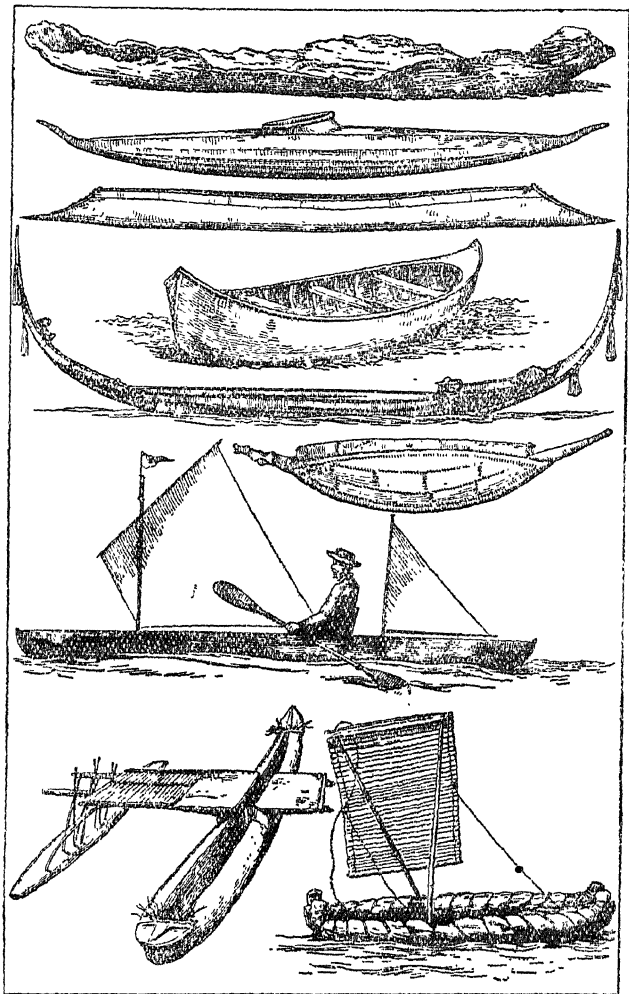
**Cannonball Tree** (*Couroupita guianensis*), S. African tree, order Myrtaceæ, with round fruit in large cups used by natives as drinking vessels.

**Cannstatt**, or KANNSTATT, tn., Württemberg, Germany (48° 47' N., 9° 12' E.); hot saline springs; railway plant; electrical machinery; chemicals; limestone caves with extinct animal remains in neighbourhood; Austrians defeated by French near by (1796). Pop. 27,000.

**Cano**, ALONZO (1601-67), Span. painter, sculptor, and architect; court painter to Philip IV.; most of his pictures are in Seville.

**Cano**, JUAN SEBASTIAN DEL (d. 1526), Span. circumnavigator of the globe; commanded Magellan's expedition from Philippines home (1521-2).

**Canoe**, name, of Carib origin, for light boat pointed at each end.



*Types of Canoes.*

The early Brit. canoes were 'dug-outs,' and framed from single trees. The N. Amer. Indian's canoe is made of a frame of light wood, covered with birch bark, stitched with fibre, and gummed. Canoes are distinguished from all other craft by absence of fulcrum to assist paddler.

**Canon**, Church dignitary who holds a prebend in a cathedral, the presentation being usually vested in the crown, archbishop, or bishop. There are also honorary canons, who receive no revenue from the chapter's fund, and are not necessarily members of the chapter. During the monastic period in England the canons lived together in religious houses. The dean (or provost) and chapter are the governing body of a cathedral.

**Canon**, in music, composition in which the parts take up melody in succession; also a decision of Church Councils (see under CANON LAW).

**Cañon**, deep gorge cut out by river. Most famous is that of Colorado R., U.S.

**Cañon City**, town, Colorado, U.S. (38° 28' N., 105° 14' W.), at mouth of Grand Cañon of the Arkansas; copper, petroleum, iron, limestone, coal; large zinc-lead smelting works; is a health resort. Pop. 5,100.

**Canoness**, an order (instituted 8th cent.) of female devotees living together in religious houses. They took vows of obedience and chastity, but secular canonesses, generally of noble family, practised no austerities.

**Canonization**. See SAINT.

**Canon Law**, a body of eccles. law. It had great influence upon

the eccles. courts established by William I., but the canon law courts had no power over the bodies or property of the litigants, their powers being spiritual only. Compilations of laws for the Church were made in early times —e.g., in 314—when the collection was made which embraced the canons of Ancyra and of Neocaesarea. The *Decretum Gratiani* (pub. 1144) was a private collection of the monk Gratian. The early functions of the Eng. clerical convocations have been matter of controversy; in 1536 Parliament decreed that canons not opposed to the law or the royal prerogative should continue in force. The view taken by the king's courts in England, and acquiesced in by the eccles. courts, since Henry VIII., is that the Church of England was always an independent national Church, unbound by constitutions of council or Pope, unless those constitutions were recognized by Eng. secular or spiritual courts. The Thirty-Nine Articles (1570) and the Prayer Book (1661) were legislated by Eng. provincial synods.

**Canopus** ( $\alpha$  Argus), a lustrous southern star, about half a magnitude fainter than Sirius. Immeasurably remote; it must accordingly be of prodigious real magnitude. Shows spectrum of early solar type.

**Canopus**, a Brit. battleship launched in 1897; 12,950 tons; length 390 ft.; beam 74 ft.; speed 18.5 knots; armament four 12-in., twelve 6-in., ten 12-pr., and six 3-pr. guns. Was on her way to join Cradock's squadron when it was annihilated by the Ger.

squadron under von Spee (Nov. 1, 1914). Afterwards used as shore battery in Port Stanley at battle of the Falkland Islands (Dec. 8, 1914).

**Canosa**, *tn.*, Bari, Italy (41° 13' N., 16° 4' E.); Roman city, abandoned 9th cent.; modern town built 963; Byzantine cathedral (1101); tomb of Bohemond, son of Robert Guiscard; olive plantations. Pop. 24,000.

**Canossa**, *vil.*, Italy (44° 34' N., 10° 27' E.); the anc. ruined castle was scene of Emperor Henry IV.'s humiliation before Pope Gregory VII. in 1077.

**Canova**, ANTONIO (1757-1822), Ital. sculptor, revived the art of classic sculpture. The greatest work of his novitiate was *Dædalus and Icarus*. In 1780 he went to Rome, where he applied himself to the antique, and produced *Theseus vanquishing the Minotaur*, *Psyche and the Butterfly*, *Perseus with the Head of Medusa* (Vatican). He modelled a statue of Napoleon, and in 1815 obtained the restoration of the Ital. treasures removed by the latter. In 1816 he received the title of Marquess of Ischia. After 1819 he executed some of his greatest works. The group of *Hercules and Lichas* ranks as his most sublime achievement; *Hebe*, of which he made three replicas, his most graceful work; and the monument to the Archduchess Maria Christina his finest. The Louvre in Paris has his celebrated *Cupid and Psyche*.

**Canovas del Castillo**, ANTONIO (1828-97), Span. statesman; filled many offices of state, and was premier six times; author of several historical works; assassinated by anarchist.

**Canrobert**, FRANÇOIS CERTAIN (1809-95), Fr. marshal; saw much foreign service; commanded division at the Alma, and was afterwards commander-in-chief of Fr. army; distinguished himself at Magenta and Solferino, afterwards at Worth and Gravelotte.

**Canso**, GUT OF, strait between Nova Scotia and Cape Breton, connects Chedabucto Bay with Gulf of St. Lawrence (17 m. long; average breadth 2½ m.); only used by coasting vessels.

**Cantab.** (Lat. *Cantabrigiensis*), of Cambridge University.

**Cantabile** and **Cantilena**, musical terms to denote smooth-flowing, sustained method of performance.

**Cantabrian Mountains**, range to the w. of the Pyrenees (42° 50'-43° 20' N., 2°-5° W.), extending over 300 m. across the N. of Spain; its highest peak is Peña Vieja (8,743 ft.); richest coal supplies of Spain; crossed by three railways.

**Cantacuzene**, JOHN V. (1292-1383), Emperor of the East; prime minister of Andronicus the younger (1328), and in 1341 became regent; seized the throne (1342); forced to resign (1354); retired to monastery, where he wrote a history of the empire from 1320 to 1360. His son MATTHIAS (d. 1383) strove vainly to regain the throne, but was defeated (1357), and, like his father, adopted a monastic life.

**Cantagallo**, *tn.*, Rio de Janeiro, Brazil (22° S., 42° 18' W.); staple industries are coffee and sugar. Pop. (*tn. and dist.*) 36,000.

**Cantal**, *dep.*, Central France (45° 10' N., 2° 45' E.), s. portion of Auvergne, derives name from

huge volcanic mass occupying centre (Plomb du Cantal, 6,100 ft.); rivers Dordogne and Truyère flow from this N. and W.; rye, buckwheat, potatoes and chestnuts, butter and Roquefort cheese; natural beauties; mineral springs; coal, antimony, and marble. Cap. Aurillac, 270 m. S. of Paris. Area, 2,229 sq. m.; pop. 223,300.

**Cantala Fibre.** See under SISAL HEMP.

**Cantata** (Ital.), story with musical setting, usually opening with chorus, followed by arias and recitatives, and ending with a chorale; examples by Bach, Carissimi, Mendelssohn, Weber, Brahms, and others.

**Canteen**, military refreshment room forming part of every regimental institute, for supplying troops with food at lowest prices consistent with good quality; since 1857 under management of three officers, and consisting of beer bar, grocery shop, and coffee room (non-alcoholic drinks). Intoxicants not sold in 'wet canteen' before noon or after tattoo, except in cavalry barracks for a quarter of an hour before midday stables. During the Great War army canteens were controlled by Navy and Army Canteen Board. At close of war profits had amounted to more than £1,567,400, of which up to July 1919 over £850,000 had been distributed under the authority of the Army Council. For the disposal of the rest a United Services Fund, under the chairmanship of Lord Byng, was created. This board, which included serving and ex-serving soldiers, decided to expend the money in

helping to establish clubs for ex-service men; in giving assistance to their wives, widows, and families, and ex-service women; also in promoting welfare schemes for serving soldiers. Navy decided on its own scheme.

Canteens were also established in connection with munition works and at the principal docks. The profits were said to amount to some 15 per cent.

**Canterbury**, city, Kent, eccl. metropolis of England (51° 16' N., 1° 5' E.), a dignity which it has enjoyed since Augustine first settled there (597); on riv. Stour, cathedral on site of anc. monastery burned down 1067; begun 1070; partly destroyed by fire 1174; subsequently rebuilt and completed about 1495; magnificent doubly cruciform edifice, fine examples of Norman and later styles; outstanding historical figure connected with cathedral is BECKET (St. Thomas of Canterbury), whose shrine was a place of pilgrimage for centuries (*cf.* Chaucer's *Canterbury Tales*); St. Augustine's Missionary Coll. occupies some of the restored buildings of the anc. monastery; Beaneys Institute (1899) has museum, library, and art collections; King's School (c. 250 pupils), reconstituted by Henry VIII. in 1541; cavalry school and riding establishment of army; city returns one M.P. Pop. 23,800. See Dean Stanley's *Historical Memorials of Canterbury* (10th ed. 1883), Willis's *The Architectural History of Canterbury Cathedral* (1845); Stirling Taylor's *Story of Canterbury* (1912).

**Canterbury.** (1) Munic. dist., 6 m. S. of Sydney, New South

Wales. Pop. 4,300. (2) Provincial dist. in centre of South Island, New Zealand. Area, 14,040 sq. m., of which 3,900 sq. m. form the Canterbury Plains; chief wheat and sheep dist. of the Dominion. Cap. CHRISTCHURCH; N. port, Lyttelton; S., Timaru; exports pastoral products. Pop. 173,200.

**Canterbury Bells.** See under CAMPANULA.

**Cantharidæ.** See BLISTER BEETLES.

**Canticles**, short songs or hymns, such as the *Benedicite*, *Magnificat*, *Nunc Dimittis*, etc. The name is more particularly applied to the Song of Solomon (Song of Songs). The title is derived from the first line of the book ('The Song of Songs, which is Solomon's'), but it is not to be assumed that the Canticles were written by Solomon. Rather it is held by Cheyne and others that the collection was the work of a scribe who had access to a selection of the songs such as are used (to this day in N. Syria) in wedding festivities, the terms 'Solomon' and 'the Shulamite' possibly being figurative.

Regarded once as a spiritual allegory, but now considered by some critics only as an example of Hebrew drama.

*Proverbs, Ecclesiastes, and Song of Solomon* (The Century Bible, Jack), by Currie Martin.

**Cantilever**, bracket for supporting balcony; pier in bridge building; in both uses the length is much greater than the depth. See BRIDGE.

**Canton.** (1) In Switzerland, a geographical administrative area or state, having its own laws and

self-government in all domestic affairs; settlement of disputes between the various cantons matter for central government at Berne; in all 22 cantons. (2) In France a territorial rather than administrative unit, subdivision of *arrondissement*.

**Canton.** (1) The southernmost and largest mar. prov. (Kwangtung) of Chin. republic. Area, including Hainan Islands, c. 100,000 sq. m.; pop. about 320 per sq. m.; hilly; large, well-watered, and fertile valleys, but has to import rice from Wu-hu; has three railways, (i.) joining Swatow and Ch'ao-chou; (ii.) between Canton city and Hong-Kong (1915); (iii.) between Canton and Hankow. Staple exports tea and silk. Much of products go to Hong-Kong. Peninsula of Kowloon (380 sq. m.) is British, and is highly developed; lead and silver. Pop. (est.) 32,000,000.

(2) Or KUANG-CHOW, cap. of above prov. (23° 10' N., 113° 18' E.), 90 m. up Canton R.; one of the largest and most populous cities of republic; there are now old and new cities, western suburbs, island of Honam, and foreign concessions in Shamien and Fati; has perhaps the largest water pop. of any city; sampans and small craft abode of the Tanka, large-footed race who spend whole lives on water; surrounding hills one huge burial ground; city lies low; floods (that in spring of 1915 drowned thousands of people, and almost brought about famine; evil effects still visible); large and varied industries. Shipping trade at Whampoa, 12 m. down Canton R. Pop. (est.) 900,000.



**Canton.** (1) City, Ohio, U.S. (40° 50' N., 81° 24' W.), on Nimi-shillen Creek; engines, cars, bridges, mill and agricultural machinery, etc.; clay, limestone, coal, and grain are exported. Pop. 50,200. (2) Tn., Illinois, U.S. (40° 33' N., 90° 5' W.); manufactures farming implements, etc.; coal mining. Pop. 10,400.

**Canton** (or PEARL) RIVER, formed by the union of the West (Si), North (Pe), and East (Tung) rivers, Kwangtung, China (22°-23° 5' N., 113° 28'-114° 20' E.); divided into two parts—the narrow (Tung R.) and the wide part from Tai-peng to Hong-Kong, c. 45 m. long (BOCCA TIGRIS, or tiger's mouth). Where it narrows are Bogue Forts (taken by British, 1841 and 1856). Whole country to N. very fertile (rice), and intersected by canals and waterways.

**Cantonments.** Troops are said to be in cantonments when quartered in and round the houses of towns, villages, etc. In India cantonments are permanent barracks, situated, as a rule, a few miles outside city, chiefly for sanitary and disciplinary reasons. Kitchener's reorganization scheme abolished many small cantonments, and substituted large military centres.

**Cantor.** The *cantoris* side of the choir is generally on the N., or left side; the *decani* being opposite. See PRECENTOR.

**Cantuar.** (Lat. *Cantuariensis*), of Canterbury. The Primate of all England signs himself Cantuar.

**Canusium**, anc. name for CANOSA.

**Canute the Great**, CNUT, or KNUT (995-1035), King of England; son of Sweyn Forkbeard

of Denmark. His father had driven Ethelred the Unready into exile, and had compelled the English to accept him as king, but on the death of Sweyn (1014) the English restored Ethelred. Canute at once made war upon the Eng. king, who died 1016, and continued the struggle against Edmund Ironside, his successor, which ended in the partition of the kingdom between them (1016). Upon Edmund's death (1017) Canute was accepted as King of all England. He became King of Denmark on his brother's death (1019), acquired the throne of Norway by conquest (1028), and the King of Scotland did him homage (1031). He ruled England as a native ruler, by Edgar's laws, conciliating the clergy by his liberality, and securing his position still further by the creation of a standing army. The four earldoms, Wessex, Mercia, East Anglia, Northumbria, were formed by him (1017).

**Canvas**, coarse unbleached cloth made from hemp or flax, used for tents, sails, and art purposes; manufacture of Eng. sailcloth began in 1590.

**Canvasback Duck** (*Aythya vallisneria*), N. American bird, greatly prized as a culinary delicacy; allied to Brit. pochard; breeds in Canada; winters in U.S. See POCHARD.

**Canvassing**, the soliciting of votes at an election; must be conducted without treating, undue influence, personation, or aiding, abetting, counselling, and procuring personation—all of which are corrupt practices within the meaning of the Corrupt and Illegal Practices Prevention

Acts (see ELECTION). Payment may not be made to canvassers; a paid election clerk may canvass, but only voluntarily, and apart from duties of his office.

**Cão, Diogo.** See CAM.

**Cao-Bang.** (1) Circle, Tongking ( $22^{\circ} 40' N.$ ,  $106^{\circ} 5' E.$ ); mountainous; tin, galena, and iron ore; forests. Area, 3,000 sq. m.; pop. 70,000. (2) Cap. of above circle, 72 m. N.N.W. of Langson; rice, maize, sugar-cane, betel, etc. Pop. 6,000.

**Caoutchouc.** See RUBBER.

**Capablanca, J. R.** (1888– ), Cuban chess-player; gave simultaneous exhibitions in England during latter part of 1919; won Victory Chess Tournament (1919); wrote *My Chess Career* (1920).

**Cape Ant-eater, or AARD-VARK** (*Orycteropus afra*), S. African mammal; nocturnal and burrowing, feeding on termites and ants; mouth elongated and tubular; tongue vermiform; teeth numerous and complex, and quite unlike those of any other mammal. Another species is found in N. Africa.

**Cape Breton**, island, Nova Scotia, Canada ( $45^{\circ} 28' - 47^{\circ} 3' N.$ ,  $59^{\circ} 41' - 61^{\circ} 36' W.$ ); separated from mainland by Gut of Canso; cut in two by Bras d'Or Lake and a ship canal; produces grain, timber, coal, salt, marble, limestone, granite; important fisheries; iron and steel manufactures; shipbuilding; connected with mainland by Intercolonial Railway; first colonized by French (1712); ceded to Britain (1763). Area, 3,989 sq. m.; pop. 122,000.

**Cape Coast.** See GOLD COAST.

**Cape Cod**, hook-shaped peninsula, Massachusetts, U.S. ( $42^{\circ} 5'$

$N.$ ,  $70^{\circ} 14' W.$ ); cranberry culture; fishing; summer resorts. *Cape Cod Canal*, begun in 1909; completed 1914; 8 m. long; connecting Barnstable Bay with Buzzard's Bay, lessening distance between Boston and New York by 70 m. Cost £2,500,000.

**Cape Colony.** See under CAPE OF GOOD HOPE.

**Cape Flight.** Several aviators attempted a flight from London to Cape Town in spring of 1920. With assistance of Air Ministry and co-operation of Vickers, Ltd., the *Times* arranged one flight, the object of which was to make definite scientific exploration and to test practical utility of Cape to Cairo air route. Machine left Brooklands Jan. 24, and after taking on board Dr. Peter Chalmers Mitchell, scientist, at Cairo, resumed flight (Feb. 6), but crashed at Tabora (Feb. 27). Col. van RYNEVELD and Capt. BRAND left Brooklands in *Silver Queen* (Feb. 4), reached Cairo (Feb. 9); machine wrecked Wadi Halfa (Feb. 11), but engines salvaged; returned to Cairo, obtained new machine, *Silver Queen II.* (fitted with engines of *Silver Queen I.*); made new start (Feb. 22). One mile from Bulawayo *Silver Queen II.* crashed (March 6), but in new machine *Voortrekker* resumed journey (March 17) and completed flight (March 20), thus covering a distance from Cairo to Cape Town of 5,206 m.

**Capel Curig**, picturesque hamlet and dist., Arfon div. (between Bettws-y-Coed and Snowdon), Carnarvonshire, N. Wales, formerly a posting station on the Holyhead road.

**Capelin Fish.** See SALMON FAMILY.

**Capella** (*Alpha Aurigæ*), first-magnitude star in constellation of Auriga; of pearly hue, Capella has been found by spectroscope to be a close double star.

**Capelle**, EDWARD VON (1856–), under-secretary of Ger. Admiralty (1913–16); succeeded von Tirpitz as secretary of state for the imperial navy, and held post 1916–18; always an enthusiastic advocate of a larger Ger. navy, he was responsible for the increase of estimates from £6,000,000 in 1899 to £23,000,000 in 1913. When Tirpitz fell (1916) he carried on the submarine warfare in the spirit of his predecessor. Under his régime the first naval mutiny broke out at Kiel; the second occurred after his supersession in Sept. 1918.

**Cape of Good Hope**, promontory, S. Africa (34° 24' s., 18° 29' E.); first sighted by Diaz (1486); called 'Cape of Storms'; rechristened by King of Portugal; has a lighthouse.

**Cape of Good Hope, PROVINCE** OF THE, formerly CAPE COLONY, part of Brit. Empire forming extreme s. of Brit. S. Africa and of African continent (30° s., 23° E.), bounded n. by S.W. Africa and Bechuanaland protectorates, n.e. by Transvaal, Orange Free State, Basutoland, Natal, s.e. and s. by Southern Ocean, and w. by Atlantic Ocean. Running parallel with coast, and about 150 m. distant from it, is series of mountains known by various names of Drakensberg, Stormberg, Sneeuwberg, Nieuwveld, Roggeveld, and Kamiesberg Mountains, with ele-

vations of 6,000 to 11,000 ft. From coast to these, surface rises by three terraces divided by subsidiary mountain ranges, large part of third terrace being occupied by Great Karroo, a long treeless plateau, with bare table-topped hills, sloping from 4,000 ft. on w. to 3,000 on E., and covered with scrubby karroo bush. The Southern Karroo, or second terrace, resembles Great Karroo, and both have great fertility under irrigation.

Coast terrace and hilly country in E. have grassy plains and woodlands. To N. of great range of mountains surface slopes to valley of Orange River, and plateau of interior beyond. Eastern part of province has rainfall of 25 to 28 in., centre, s. coast, and Karroo, 9 to 25 in., Great Karroo and country N. and N.W. of it, 9 in. or less. No large river except Orange, which rises in mountains in E. Western districts have winter rains, and eastern summer rains. Mean temperature ranges from 51° to 79° F.

*Resources.*—Chief source of wealth is diamond mines, centre being at Kimberley in Griqualand W.; rich copper deposits in Namaqualand; coal in E., manganese and tin near Cape Town; iron, zinc, lead. Sheep and Angora goats are reared in large numbers, producing great quantities of wool and mohair; cattle, horses, mules, donkeys bred; lucrative ostrich farming carried on. Maize, millet, wheat, barley are cultivated; grapes, peaches, apricots, nectarines, figs, oranges, olives, pineapples, bananas, tomatoes, and other fruits and vegetables grown;

wine, brandy, and raisins produced; manufactures unimportant; exports include diamonds, wool, mohair, ostrich feathers, copper ore, regulus, and precipitate, raw hides, sheep and goat skins, maize; imports clothing, iron, coal, textiles, leather, carriages, books, furniture, paper, tobacco, grain, hardware, cutlery, tools, provisions, liquors, etc. Irrigation has made rapid strides. Railway mileage is 4,254.

*Inhabitants* include Dutch, English, and other European nationalities; in western districts are greatest number of Dutch, in eastern of English. The Boers are descended from early Dutch colonists and Huguenot exiles from France. Natives include Bantus, or Kaffirs, Hottentots, Bushmen, Griquas, etc. Many of Bantus are people of fine physique; Hottentots are short, and Bushmen are lowest S. African race. There are also numbers of Indians and Malays, and of 'coloured' people (*i.e.*, half-castes). Chief religion of whites is Protestantism (Dutch Reformed Church, Anglican, Presbyterian, etc.). Education is obligatory for European children. Cape Town is provincial capital and seat of Union Parliament. Area, 276,966 sq. m.; pop. 2,601,900, of whom 619,300 are white. See SOUTH AFRICA.

*History.*—Cape of Good Hope was first discovered by Port. navigator, Bartholomew Diaz, in 1486, and was again doubled by Vasco da Gama in 1497–9. No Port. colonies, however, were established here, and first European nation to make settlement were

the Dutch, who in 1652 under van Riebeck established a fort on coast of Table Bay. They used it only as calling station for their ships going to E. Indies.

In 1685 the revocation of the Edict of Nantes had the result of sending about three hundred Huguenots to seek refuge at the Cape. The country was then governed by the Dutch E. India Co., whose rule was so severe that the settlers gradually removed as far as possible into the interior in order to avoid taxation and tyrannical regulations. Many Hottentots were killed and their lands annexed. Dutch control of Cape lasted for nearly a century and a half. In 1780, however, Britain, having declared war against Holland, who was allied with France, arranged to send fleet against Cape; this was carried out next year, when the British were defeated by a Fr. fleet before reaching their destination. Fifteen years later the British made another and successful invasion and captured Cape in 1795; ruled by Britain until 1803, when it was restored to Holland, the Dutch E. India Co. being now superseded by the Batavian republic, who governed for three years; war having again broken out, British once more took Cape Colony (1806), which was formally surrendered to her by treaty in 1814.

The British then began the systematic colonization of country. Several struggles with Kaffirs had already taken place, and for some time hostilities continued, wars breaking out from time to time. Ultimately the Kaffirs were defeated by Sir Harry Smith, and peace was con-

cluded in 1835. Meantime all slaves had been emancipated in 1834, which roused discontent among the Boers (Dutch settlers), and in 1835 many of the latter set off on what is called the *Great Trek*, crossed Orange River, and eventually established the Transvaal Republic and Orange Free State. In 1846 occurred another war with Kaffirs, who were defeated by British, and acknowledged that country west of river Kei was British by right of conquest. In 1847 Brit. right to district between Kei and Keiskamma was proclaimed by Sir Harry Smith, now governor. Hostilities again broke out in 1850, and continued till 1853. Meantime great discontent had been caused by Earl Grey's proposal in 1848 to establish a penal settlement at the Cape; agitation was so pronounced that idea was abandoned in 1850; this led to desire on part of colonists for representative government, and in 1854 constitution was established, with two elective chambers, the first Parliament being opened in that year.

Under Sir George Grey (governor 1854-61) various improvements were carried out; he ameliorated the conditions by which land was held by natives, supported missions, and began opening up the country by roads and railways. Brit. Kaffraria was annexed to Cape in 1865, Basutoland in 1871; latter was afterwards taken under direct control of Brit. crown. Griqualand West was also annexed in 1871, and subsequently incorporated with Cape Colony, its diamond mines

forming great source of wealth. Discovery of diamonds in various districts resulted in further development of country from 1867 onwards. During administration of Sir Bartle Frere (governor 1877-80) occurred another Kaffir war, which was soon suppressed. War in Basutoland in 1880 led ultimately to establishment of that country as crown colony. Walfish Bay was annexed in 1884; Port of St. John's in same year was incorporated with Cape Colony; and in 1885 Tembuland, with Bomvanaland and Gcalekaland, became integral parts of colony. Meantime the first Boer War had occurred in 1881; this resulted in foundation of Afrikander Bond, which aimed at establishing Afrikander nation and removing Brit. control. Pondoland was added to Cape Colony in 1894, and in 1895 occurred the annexation of Brit. Bechuanaland. Cecil J. Rhodes was prime minister in 1890-6, and had great share in development of colony. In 1899-1902 the great Boer War occurred, and for a time Cape Colony was invaded. Cape Colony was united with Natal, Transvaal, and Orange River Colony in 1910, as the Union of S. Africa; and became the Province of the Cape of Good Hope.

Purely provincial affairs are in hands of Provincial Council, which is subject to the Parliament of the Union of S. Africa. The province sends 51 members to the House of Assembly and 8 members to the Senate. The English and Dutch languages are both official.

Burton, *Cape Colony To-day*

(1907); Colvin, *The Cape of Adventure* (1911).

**Cape Race** (40° 36' N., 53° 10' W.), forming the S.E. extremity of Newfoundland; lighthouse.

**Capercaillie**, or **COCK-OF-THE-WOODS** (*Tetrao urogallus*), large species of grouse inhabiting pine woods. The beautifully plumed male is larger than the female, and is noted for its song and fighting proclivities during courtship in spring. The fowl provides sport in Scotland, Sweden, Germany, and Austria.

**Capernaum**, scene of large part of ministry of our Lord Jesus Christ, and called 'his own city'; on N.E. shore of the Sea of Galilee (32° 52' N., 35° 32' E.); identified with Tell Hum, one building of which is said to be synagogue in which Christ preached.

**Capers**, flower-buds of *Caparis spinosa*, plant of bramble tribe, grown in Sicily and S. France; prepared as pickle.

**Capes**, **BERNARD EDWARD JOSEPH** (d. 1918), Brit. novelist, betraying Meredithian qualities. Most recent works: *The Pot of Basil* (1913), *Story of Ffifne* (1914), *The Fabulists* (1915), *Moll Davis* (1916), *If Age could* (1916).

**Capet**, family name of third Frankish dynasty, founded by Hugh Capet, which ruled France in direct line from 987 to 1328, and through collateral branches of Valois and Bourbon till the Revolution (1789).

**Cape to Cairo Railway**, promoted by Cecil J. Rhodes; direct distance from Cairo to Cape Town c. 5,700 m. By end of 1910 the railhead from the N. was at Senaar (c. 1,500 m.). From Cape Town the S. African

section had been completed to the S. borders of Belgian Congo in Nov. 1909. From this point Belgians have carried the line 324 m. N. via Elizabethville to Tchelongo (total distance from Cape Town, 2,473 m.). First through passenger train reached Victoria Falls June 22, 1904. The elimination of Germany as an African power will probably result in the completion of the railway through Brit. territory.

**Cape Town**, mother city of S. Africa (33° 56' S., 18° 28' E.), cap. of prov. of Cape of Good Hope, and seat of legislature of Union of S. Africa; beautifully situated on Table Bay, at foot of Table Mountain; many fine suburbs; also excellent harbour and docks. Notable buildings include old Dutch castle, government house, Houses of Parliament, museum, library, several colleges; mosques; observatory; seat of Anglican and R.C. bishops, and of univ.; exports wool, diamonds, ostrich feathers, gold, wine, ivory, hides, skins; imports textiles, hardware, general goods. Inhabitants include Europeans, natives, coloured people (half-castes), Malays, and Indians. Pop. 99,700 whites.

**Cape Verde**, most westerly cape, Africa (14° 48' N., 17° 33' W.).

**Cape Verde Islands**, group 320 m. W. of Cape Verde (17° 12'–14° 46' N., 22° 40'–25° 22' W.). Windward group includes Santo Antão, São Vicente, Santa Luzia, São Nicolão, Boa Vista, and Sal; Leeward group, Maio, São Thiago, Fogo, and Brava. Area, 1,650 sq. m.; volcanic; some islands arid, others with abundant rainfall, very fertile; largest

island, São Thiago; coffee. Discovered 1456; colonized 1562; belong to Portugal. Slavery abolished c. 1850–78. Pop. (chiefly mulattoes and negroes), 149,800.

**Cap Haitien**, tn., republic of Haiti, W. Indies, 85 m. n. of Port-au-Prince; good harbour; terrible earthquake (1842); bombarded by British (1865). Pop. (est.) 30,000.

**Cap Helles**, promontory, extreme s. end of Gallipoli (40° 2' N., 26° 6' E.), with the outermost forts of the Dardanelles on the European side; Brit. and Fr. naval force demonstrated against forts (Nov. 3, 1914); attempted to reduce them (Feb. 19, 1915), but failed; bombardment renewed (Feb. 25); battery silenced and demolished. On beaches in neighbourhood part of the Brit. expeditionary force landed (April 25, 1915), and after a herculean struggle gained a precarious lodgment on the cliffs. See GALLIPOLI.

**Capias** (Lat., 'thou shalt take'), in Eng. law, writ in which the sheriff is required to *take* or arrest the person named. Formerly used for bringing a defendant or accused before the court to answer a claim or charge against him; since Debtors Act (1869) only used when defendant evinces intention of leaving the country; practically obsolete.

**Capillarity**. The particles forming the surface layer are in a condition different from those in the interior of a liquid; this layer is in a state of tension, and its action resembles that of a thin elastic membrane stretched tightly over the surface. In the interior of the liquid a molecule

is subject to attractive forces exerted by all the molecules immediately surrounding it. On the average these forces are in equilibrium, and have no sensible effect on the motion of the molecule. But a molecule in, or very close to, the surface is acted on only by forces which attract it downwards. Hence the free surface of a liquid tends to reduce itself to the least possible area—e.g., a raindrop tends to assume the form of a sphere, because a sphere is the form in which a given volume has the least possible superficial area. This tendency of the surface of a liquid to assume the minimum area possible means that it is in a state of tension, and the force acting is termed *surface tension*. It is measured by the number of units of force which it exerts across unit length of a line drawn across the surface of the liquid—e.g., the surface tension of pure water is about 75 dynes per centimetre, or about 3 grains weight per inch.

The behaviour of liquids in tubes of very fine bore is said to be due to capillarity, but is in reality an effect of surface tension. Consider the case of a glass tube of fine bore, both ends open, with its lower end dipped vertically below the surface of water. The water rises in the tube to a height which depends on the internal radius of the tube. At the surface layer of water inside the tube, three tensions are acting—water-air, water-glass, and glass-air—and these must be in equilibrium when the water has reached its highest point. The result is that the water in

the tube stands so that the angle between its surface and that of the glass is nearly zero (i.e., when the glass is clean and the water is pure). Consequently, the water in the tube assumes a surface which is concave upwards. Owing to this concavity there must be a greater pressure on the concave than on the convex side, and hence the water immediately under the surface films must be under a lower pressure than the atmospheric pressure on the concave side. The water in the tube must therefore stand at a higher level than the water outside the tube. With tubes of narrower bore the concavity and the difference of pressure are greater, hence the height the water reaches is greater—e.g., in a tube of internal diameter  $\frac{1}{16}$  inch, the water rises about half an inch; if the diameter is  $\frac{1}{32}$  inch, the rise is over 50 inches. With mercury, the tensions are such that the surface makes an angle of about  $130^\circ$ ; consequently the surface inside the tube is convex upwards. Hence there is a greater pressure under the convex surface, and therefore the inside level is below that outside the tube. These principles explain capillary phenomena generally—e.g., the entry of water through the micropyle of a seed, the absorption of water by a lump of sugar or a piece of blotting-paper, the rise of oil in a lamp wick, etc. The ascent of sap in trees or plants is due not to capillary forces, as commonly supposed, but to osmosis.

**Capital** (Lat. *caput*, 'the head'). (1) Chief city of a

country or state, and the seat of its government. See under the various countries. (2) In calligraphy and typography, letters used in headings or as initials; originally capitals were the only Roman letters. For forms of the letters see ALPHABET. In English, capitals are now only employed as initial letters of words which have some special distinction—all proper names and their derivative adjectives, all nouns which refer to the Divine Being, the pronoun I, the first words of new sentences and of lines of poetry. Official titles and the technical words of a treatise are usually singled out by the use of an initial capital.

**Capital** is wealth employed to make profit; involves element of *prospectiveness* and element of *productivity*. A regard for the future rather than for the immediate present obviously leads to accumulation and employment of capital; an increase of wealth is no less manifestly result of such action. Capital sometimes classified as *fixed* and *circulating*. Fixed capital is term applied to wealth not exhausted by the single act of production—e.g., railways, machinery, buildings, etc.; circulating capital is term applied to raw material in use for other purposes. Both definitions are unsound though in common use. *Capitalism* is the commercial system which makes labour dependent on capital. Although Socialist writers have tended to ignore the separate work and depreciate the distinct influence of the employer, they have not been wrong in associating the rise of the factory system with the greater domi-



nance of capital (see SOCIALISM). It is none the less true that capital and labour cannot, under modern conditions, dispense with the services of each other, and that they are jointly interested in increasing the total amount of wealth produced, from which their shares, whether large or small, must ultimately come.

**Capital**, in arch. See COLUMN.

**Capital Punishment**, infliction of the death penalty, practically confined now, in England, to punishment of the crime of murder or high treason. The method of execution amongst the ancient Greeks and Romans was by the axe or sword. The first recorded instance of beheading in Britain took place in 1076, and the last person so executed was Lord Lovat (April 9, 1747). In the case of persons of common rank the sentence was usually carried out with disgusting barbarities. Disembowelling was not abolished until 1814; nor drawing and quartering until 1870. Decapitation is still employed in Germany, France, Sweden, Denmark, and China. The present method of execution in Britain is by hanging, or in the case of spies by shooting. The report of a royal commission, appointed in 1864, resulted in the abolition of public executions. Formerly in Great Britain, and particularly in the 18th cent., the death penalty was adjudged for the most trifling crimes, such as stealing goods of the value of five shillings, or rifling a rabbit-warren. Of recent years it has been virtually abolished in cases of infanticide.

The reform of the criminal

laws has been largely due to the strenuous efforts of such men as Sir Samuel Romilly and Sir James Mackintosh. In the Brit. army and navy the death sentence is inflicted for such offences as desertion, gross neglect of duty, and cowardice before an enemy, in terms of the Army Act, sec. 54. With regard to the death sentence for cowardice, special modifications were made during the Great War. In some of the states of America (as also in Italy, Switzerland, Portugal, Holland, Norway, and Rumania) the death penalty has been abolished altogether; in others it is inflicted for murder, train wrecking, arson, and rape. It is carried out in New York, Ohio, and Massachusetts by ELECTROCUTION; in the other states by hanging.

**Capitol**. (1) The temple on the Capitoline Hill dedicated to Jupiter, Juno, and Minerva; was centre of Roman religion, and there were kept the Sibylline books; the present Capitol was designed by Michelangelo. (2) Seat of U.S. National Congress, Washington, District of Columbia; occupies  $3\frac{1}{2}$  ac.; 751 ft. long; greatest breadth, 324 ft.; height, with dome, 285 ft.; cost of erection £3,200,000.

**Capitulation**, an agreement between the commanders of belligerent forces for the surrender of bodies of troops, naval units, or defended places. The essential characteristic of a capitulation is that it rests on agreement which may take no special form; may be arranged by formal negotiation or by the hoisting of the white flag; when latter is done by order of the



# SCENES IN CAPE OF GOOD HOPE.

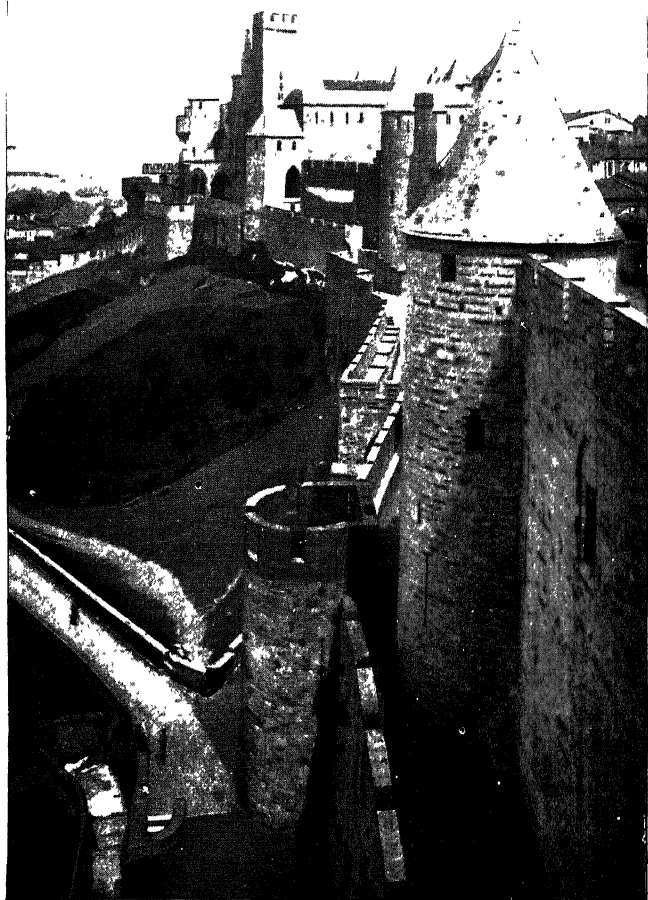
1. Zulu kraal
2. Boer hunter outspanning
3. Trekking
4. Ostrich farm
5. Farmhouse and Cape cart





MAP OF THE CAPE OF GOOD HOPE AND ADJOINING REGIONS.

[Scale—1 in. = 170 English miles.]



CARCASSONE—THE CHÂTEAU AND THE RAMPARTS.  
*(Photo—Exclusive News Agency.)*

officer in supreme command, it is equivalent to an offer of surrender without conditions. Terms of capitulation depend in the main on the relative military situation of the two forces, but may be influenced by political considerations or by chivalrous respect for valour shown in defence. In Great War generous terms were accorded to Ger. forces in Pacific Islands, Togoland, Kamerun, S.W. and E. Africa; onerous terms were, however, exacted from Brit. forces which capitulated at Kut. A capitulation being essentially a military convention, cannot contain political stipulations; if so, these may be disowned. Hague Convention requires terms once settled to be scrupulously observed by both parties. This does not prevent destruction of arms or munitions before the definitive agreement in terms; subsequent destruction—as, for example, of Ger. fleet at Scapa Flow—is a war crime, justifying reprisal or punishment of offenders.

**Capitulations, THE**, collection of arrangements and treaties confirmatory of them concluded at various dates since 1535 between Turkey and the Western powers, under which, up to 1914, the nationals of the latter powers were, save in case of voluntary resort to Turkish courts, exempt, both in civil and criminal matters, from Turkish jurisdiction. The capitulations also extended to Turkish dependencies (even after securing their independence—*e.g.*, Rumania, Serbia, and Bulgaria). In Egypt modification of system introduced in 1875, when mixed

courts were established to deal with civil cases in which a native, a foreigner, or foreigners of different nationalities, were involved.

**Capiz.** (1) Province, Panay, Philippines, N. coast of the Visayan Sea; semicircular range of mountains encloses low and fertile plain watered by large and navigable riv. Capiz; sugar, corn, rice, indigo; cattle and horses; gold and iron. Area, 1,643 sq. m.; pop. 225,000. (2) Tn., cap. of above prov. (11° 37' N., 122° 50' E.), on l. bk. of Capiz; port of call; rice. Pop. 18,500.

**Cap Martin**, headland, Alpes-Maritimes, France (43° 45' N., 7° 30' E.), 2 m. from Mentone; pine forest; select winter resort.

**Capnomancy**, method of divination by watching the behaviour of smoke from incense or sacrifice; omen interpreted from shapes in which it ascended and direction in which it disappeared.

**Cap of Maintenance**, cap of state carried before monarchs or dignitaries on state occasions. Brit. cap borne at coronations is of crimson velvet edged with ermine; has brim turned up and ends in two points behind (by-cocket shape), and is carried at end of a wand by hereditary bearer (Marquess of Winchester).

**Caporetto**, vil., Gorz and Gradisca, Italy (46° 15' N., 13° 35' E.), on r. bk. of riv. Isonzo; scene of disaster during Great War. Caporetto and its bridge occupied by Italians April 24, 1915, and thereafter was considered a very quiet sector. In autumn of 1917 state of Italy alarming; enemy propaganda had made great headway; strikes broke out at Socialist centres

(Turin, etc.); number of strikers drafted into army, and with troops which had refused to fire on them were sent to Caporetto sector. Soon entered into communication with enemy; Ger. 14th Army, under Otto von Below, struck on night of Oct. 23 with heavy bombardment of gas-shells along a 25-m. front, with Caporetto as centre. Next morning Austro-Ger. infantry attacked; line gave way at the vital spot, Caporetto. Whole regiments surrendered without firing a shot, and result was a disastrous retreat of Ital. army to the Piave. The 2nd Army ceased to exist; the enemy took 200,000 prisoners and 1,800 guns. See WAR, THE GREAT.

**Cappadocia**, anc. division in Asia Minor (c. 39° 20' N., 36° E.), extending from Taurus to Black Sea. Cappadocia was a province of Persia from 560 B.C. until Alexander's conquest, 330 B.C., after which it belonged to Græco-Syrian kingdom, and then was governed by independent kings; became a Roman province in A.D. 17, and remained part of Eastern Empire until conquered by Seljuk Turks in 11th cent. Chief town was Mazaca, later called Cæsarea; now Kaisarieh.

**Cappel**, or **KAPPEL**, hamlet, Zürich, Switzerland (47° 13' N., 8° 32' E.), scene of defeat and death of ZWINGLI (Oct. 11, 1531).

**Capper**, **SIR THOMSON** (1863-1915), Brit. soldier; inspector of infantry (1914) and major-general in the same year; commanded 7th Div., which was sent to Belgium (autumn 1914) as part of Rawlinson's force; made a splendid stand east of Ypres,

during which his division was reduced from 12,000 to little more than 2,000. Died of wounds received in hand-grenade experiments. 'A capable and gallant general' (H.M. the King).

**Caprellidæ**. See under MALACOSTRACA.

**Caprera** ('goat island'), off N.E. coast of Sardinia (41° 13' N., 9° 28' E.); residence of Garibaldi from 1854 to death (1882).

**Capri**, isl., S. side of Gulf of Naples, Italy (40° 32' N., 14° 13' E.); area, 5½ sq. m.; precipitous coasts; two towns, Capri and Ana Capri, connected by flight of 784 steps and carriage road; lovely scenery (notably Blue Grotto, rediscovered in 1826); classic beauty of women, limpid purity of the air, and glorious azure of the sea attract many visitors; fruits, wine, olive oil; fishing; good harbour; imperial Roman residence. Pop. 7,000.

**Capric Acid** (C<sub>10</sub>H<sub>20</sub>O<sub>2</sub>), a fatty acid, b.p. 268° C., sp. gr. 0.911, with odour suggesting goats (Capræ), found in butter, etc.

**Capriccio**, or **CAPRICE**, form of musical composition not governed by any set rules; picture painted under same conditions.

**Capricornus** ('the Goat'), tenth zodiacal constellation; alpha Capricorni is a third-magnitude double star.

**Caprification** is the name given to the process by which pollen is transferred from the flowers of male-blossomed fig trees, or *caprifici*, to those of the female-flowered fig, or *ficus*. This is done by wasps carrying pollen. The relation between the fig and the fertilizing insect is called caprification.

**Caprivi**, GEORG LEO VON, COUNT (1831-99), Ger. soldier and statesman; served with distinction in Dan., Austrian, and Franco-German campaigns; succeeded Bismarck as chancellor and foreign minister (1890).

**Caproic Acid**, or normal hexoic acid ( $C_6H_{11}COOH$ ), one of the products of the butyric fermentation of sugar; can be made by the oxidation of hexyl alcohol; oily liquid, faint disagreeable odour. Sp. gr. '945 at  $0^\circ C$ ; m.p.  $-2^\circ C$ , and b.p.  $205^\circ C$ .

**Capicum**, plant genus, order Solanaceæ, natives of Central and S. America; some annuals, others herbaceous evergreens; flower greenish yellow, fruit a fleshy envelope, which becomes leathery when ripe. Cultivated in every tropical and sub-tropical country for fruits; universally used as a condiment and stomachic. The small type of fruit is known as chillies; chief sources of supply are Zanzibar, Uganda, Nyasaland, Brit. E. Africa, Natal, Sierra Leone, and W. Indies.

**Capstan**, appliance used on board ship for moving heavy weights, or winding cables. Capstan works on principle of wheel and axle, consisting in simplest—now obsolete—form of timber column like truncated cone revolving on a spindle fixed on deck and worked by bars fixed in upper end; generally of steel or iron, driven by steam or electricity; now largely replaced by steam winches.

**Capsule**, botanical term for any dry, many-seeded fruit which splits open ultimately to permit the escape of the seeds. This is done in the following ways: (1)

by round pores, as in poppies and snapdragon; (2) by teeth at the top, as in campion; (3) by a lid, split off from the top of the capsule, as in pimpernel and plantain; (4) by longitudinal splitting, as in violet, bluebell, iris, and many others.

**Capua**, tn. and archiepiscopal see, prov. Caserta, Italy ( $41^\circ 6' N.$ ,  $14^\circ 12' E.$ ); has 11th cent. cathedral, greatly modernized. Ancient city, once a rival of Rome and long famous for its luxury, was 2 m. s.s.e. During second Punic War it took the part of Hannibal (216), for which it was sternly punished by Rome (211); suffered devastation by Goths, Vandals, and Langobards, and was finally destroyed by Saracens (840). Sixteen years later modern city was founded. Garibaldi defeated Neapolitans outside the city (1860).

**Capuchin** or SAPAJOU MONKEYS (*Cebus*), a genus of New World monkeys of family Cebidæ (see under PRIMATES); found from Central America to s. of Brazil; often in menageries.

**Capuchin Friars** (from *capuche*, 'cowl'), an offshoot from the Franciscans (officially styled 'Friars Minor of the Order of St. Francis, Capuchin'), founded in early part of 16th cent. by Matteo di Bassi, who adopted a pyramidal hood, grew a beard, went barefoot, and generally reverted to the rigid system of living instituted by St. Francis. The religious authorities attempted to suppress these innovations, but they were eventually ratified by Clement VII. (1528). The Capuchins wear a brown habit.

**Capulets and Montagues**, Veronese families unknown to



history. Their story, as told in Shakespeare's *Romeo and Juliet*, is taken from Brook's versified trans. of Bandello's Italian novel.

**Capus**, ALFRED (1858- ), Fr. novelist, playwright, and essayist; member of Fr. Academy (1914); wrote *Les Mœurs du Temps* (1912), collection of articles on social topics; plays (*Les Maris de Léontine*; *L'Oiseau Blessé*, *L'Attentat*, *Mariage Bourgeois*) pub. in 7 vols. (1910-11).

**Carabidea**, a sub-order of beetles, distinguished by their five-jointed tarsi, their filiform antennae, and their carnivorous habits. They are speedy of movement and have well-developed jaws. Amongst them are the huge and beautiful ground beetles (Carabidæ), including the bombardier (*Brachinus*), so called because when irritated it ejects an unpleasant fluid which, immediately volatilizing, resembles a puff of smoke; tiger beetles (Cicindelidæ), found all the world over, which run down their insect prey by speed; carnivorous water-beetles (Dytiscidæ), with flattened, oar-like hind-legs, common in ponds and ditches.

**Carabiniers**, or CARBINEERS, name formerly applied to all regiments of light horse, but now restricted in Brit. army to 6th Dragoon Guards, the 'King's Carabineers'; name originally applied in France to light horse armed with carbines.

**Carabobo**, dep., Venezuela, S. America (9° 40'–10° 40' N., 67° 40'–68° 44' W.); thickly populated in centre and S.W.; coffee, cacao, sugar, cotton, maize, fruit, dyewoods, and rubber; marble quarries; cattle and

hides are exported from Puerto Cabello. Cap. Valencia. Area, 2,984 sq. m.; pop. 200,000.

**Caracal**, tn., Romanetzi, Rumania (44° 68' N., 24° 22' E.), near r. bk. of the Oitu (trib. of the Danube); named after Caracalla; grain. Pop. 12,000.

**Caracal**. See CAT FAMILY.

**Caracalla**, MARCUS AURELIUS ANTONINUS (A.D. 186–217), Roman emperor; son of Septimius Severus; noted for his cruelties and extravagance; ravaged Mesopotamia and destroyed tombs of Parthian kings; built Arch of Septimius Severus in Forum.

**Caracas**, tn., Venezuela, S. America (10° 31' N., 66° 58' W.), 8 m. S. of its port, La Guaira (by railway, 22½ m.); seat of archbishop; federal palace, univ., cathedral, museum, theatre, and Yellow House (residence of president); has suffered severely from earthquakes; cigarettes, matches, cotton, paper; exports coffee, cacao, tobacco, cattle, and hides. Pop. c. 90,000.

**Caraccl**. See CARRACCL.

**Caractacus**, British chieftain who held Roman invaders at bay (c. A.D. 48–50), but was later taken prisoner and sent to Rome.

**Caradoc Group**. See under BALA BEDS.

**Caramel**, a dark brown viscid liquid produced by heating above their melting points sugars, such as glucose, alone or with the addition of ammonia; used for colouring vinegar, spirits, beer, etc.

**Caran d'Ache** (1858–1909), pseudonym of EMMANUEL POIRÉ.

**Carapa**, genus of trees, order Meliaceae, related to mahogany; found in America and Africa. *C. guianensis* (Central America

and N. parts S. America), large tree (60 ft. to 80 ft. high), producing crab-wood of Brit. Guiana (furniture, shingles, masts and spars, etc.); substitute for inferior grades of mahogany; seeds yield crab oil. The cake left after expression of the oil is too bitter for food stuffs, and of little manurial value.

**Carapace**, a protecting shell, as in crabs (*Limulus*, the king crab), lobsters, and tortoises.

**Carapequa**, tn., Paraguay, S. America (25° 45' S., 57° 19' W.); district produces tobacco, sugar, and cotton. Pop. 16,000.

**Carat**. (1) Weight of 3.163 grains troy, used in weighing precious stones. (2)  $\frac{1}{216}$ th part of any weight of gold alloy; an object said to be 18-carat gold contains 18 parts of pure gold to 6 parts of alloy. Coinage gold is 22 carats fine.

**Carausius**, MARCUS AURELIUS (c. A.D. 250–293), Roman general who usurped rule of Britain and assumed imperial rank (287); was assassinated by Allectus.

**Caravaca**, tn., Murcia, Spain (38° 7' N., 1° 50' W.); considerable industrial centre, though lacking railway communication; ironworks and tanneries; jasper quarries. Pop. 16,000.

**Caravaggio**, POLIDORO CALDARA DA (1492–1543), Ital. artist; under direction of Raphael executed friezes in Vatican.

**Caravan**, band of traders travelling together on camels for mutual protection against predatory tribes; number of camels varies from about 30 to 1,000; file is often preceded by an unladen ass, and first camel is gaily decorated. *Caravanning*

—i.e., travelling from place to place in a covered vehicle with beds, stoves, etc., either horse-drawn or self-propelled—is a popular form of camping out.

**Caravanserai**, roadside inns, for shelter of caravans and travellers generally in parts of Asia; central court, with fountain, is open to the sky; entered by single large gateway, protected by strong doors and chains.

**Caravel**, or CARVEL, originally a light ship; name has been variously applied to Turk. warships, Span. 15th and 16th cent. sea-going ships, and Fr. fishing boats.

**Caraway**, fruit of *Carum carui* (order Umbelliferae); known to Arabians and Greeks, and still used; aromatic; contains essential oil used as stimulant and carminative, also in preparation of liqueurs, such as kummel. 'Caraway chaff,' an inferior oil, is used for scenting soaps, and residue in Germany as cattle food. Grown chiefly in Holland, Germany, and Russia (Dutch seed best for distilling). Yield of oil varies from 3.5 to 7 per cent.

**Carballo**, or BAÑOS DE CARBALLO, tn., Corunna, Spain (43° 12' N., 8° 43' W.); has mineral springs and baths; agricultural centre. Pop. 13,000.

**Carberry Hill** (alt. 400 ft.), 8 m. S.E. of Edinburgh, Scotland (55° 56' N., 3° 2' W.), where Queen Mary surrendered to the Confederate lords (June 15, 1567). A monument marks the spot; on ridge to N.E. battle of Pinkie was fought (Sept. 10, 1547).

**Carbides**, compounds of carbon with metals. Production requires use of electric furnace. The two most important are calcium

carbide and silicon carbide; obtained by reducing the oxide ( $\text{CaO}$ , lime, or  $\text{SiO}_2$ , sand) with carbon (coke). Calcium carbide ( $\text{CaC}_2$ ) is easily decomposed by water with production of ACETYLENE. Silicon carbide is extremely hard; known commercially as CARBORUNDUM. The carbide of iron,  $\text{Fe}_3\text{C}$ , is cementite, and  $\text{Fe}_{15}\text{C}$  is subcarbide of iron. Cementite is almost as hard as quartz, and its presence in iron and steel is important.

**Carbolic Acid**, or PHENOL ( $\text{C}_6\text{H}_5\text{OH}$ ), colourless, crystalline solid of characteristic smell and caustic taste, sp. gr. 1.09, m.p.  $42^\circ$ , b.p.  $183^\circ\text{C}$ . Extracted from coal-tar, first as sodium phenate by mixing with soda, the phenol is next separated by sulphuric acid and purified by fractional distillation. Used in med. as a disinfectant and antiseptic, as a spray, lotion, ointment, or dressing, and internally (in weak doses) for arresting fermentation in alimentary tract; also used for preparation of salicylic acid and picric acid (trinitrophenol), from which the well-known explosive LYDDITE is prepared.

**Carbon** ( $\text{C}$ , 12) is a chemical element existing in various conditions distinguished by different properties or qualities. These include the diamond, graphite, and amorphous charcoal. The *diamond* is the hardest known solid, sp. gr. 3.5, occurring in transparent, highly refractive, octahedral crystals; used as a gem and for cutting glass. *Graphite* (plumbago or black lead), sp. gr. 2.6, is found in the form of solid grey-black, lustrous, six-sided plates, and used as a lubricant,

for polishing iron and for pencils. There are several varieties of *amorphous carbon*, obtained by combustion in a limited air supply of animal and vegetable tissues, comprising charcoal (wood and bone), a black, soft, porous solid, sp. gr. 1.6-2, a good absorbent of gases, hence used as deodorant, while bone charcoal also removes colours and is used in sugar refining; coke, the residue of gas coal; lampblack, deposited from burning oils. Coal is an impure natural form of carbon. All forms of carbon agree physically in being tasteless, inodorous, infusible, and insoluble in any known liquid; and chemically in that the same weight of any one form yields the same weight of carbon dioxide gas when burnt in oxygen or air.

*Oxides*.—Carbon burned in excess of oxygen gives the gas carbon dioxide,  $\text{CO}_2$ ; in deficiency of oxygen the gas carbon monoxide,  $\text{CO}$ .  $\text{CO}_2$  suffocating to animals; is main food of plants; used for aerating waters.

**Carbonari**, THE, an Ital. secret society, introduced originally by Fr. troops in early 19th cent.; aimed at Ital. freedom and unity; was suppressed by Austrians (1821), and reappeared in France (*Charbonnerie*), where its aims were republican. Among its members were Lord Byron and Prince Louis Napoleon, afterwards Napoleon III. The society was again active in Italy (1830-3), and later became merged in the Young Italy movement of Mazzini and Garibaldi.

**Carbonates** (salts of carbonic acid) are widely distributed in nature, commonest being calcium

carbonate ( $\text{CaCO}_3$ )—e.g., limestone, chalk, marble; all insoluble except those of alkali metals; decomposed by heat into carbon dioxide and the metallic oxide. *Bicarbonate* is a salt in which only one of the hydrogen atoms of the acid is displaced (e.g.  $\text{NaHCO}_3$ , baking soda).

**Carbon Bisulphide** ( $\text{CS}_2$ ), chemical product; heavy, colourless, volatile liquid; sp. gr. 1.292, b.p. 46; poisonous; inflammable; disagreeable smell; prepared by passing sulphur vapour over red-hot chemical charcoal; used as solvent for sulphur chloride in vulcanizing india-rubber and as insecticide.

**Carbondale**, city, Pennsylvania, U.S. ( $41^\circ 34' \text{N.}, 75^\circ 35' \text{W.}$ ); active coal-mining city (anthracite). Pop. 17,000.

**Carboniferous System** is the term applied to the great division of geological strata which contains the Coal Measures. It overlies the Devonian (Old Red Sandstone) and is overlaid by the Permian system, attaining sometimes a thickness of 20,000 ft. It is represented in Europe by the coalfields of Britain, Belgium, Westphalia, N. and Central France, Bohemia, and S. Russia, and occupies vast tracts of N. America, Australia, and New Zealand. It presents two well-marked subdivisions—a lower, mainly of marine formation; and an upper, of freshwater origin, the order of succession and constitution of the sections in Great Britain being shown as follows (from the surface downwards): (1) *Coal Measures*—Sandstones, shales, ironstones, fire-clays with interstratified workable coal

seams (this is called Upper Carboniferous); (2) *Millstone Grit*—Grits, flagstones, sandstones, shales with thin coal seams; (3) *Carboniferous Limestone*—Limestones, shales, sandstones with thin coal seams (these are called Lower Carboniferous).

Fossils fall under two types: (1) *Marine* (of the Limestone section) which include corals, crinoids, molluscs, crustacea, fish (shark order). (2) *Freshwater and Terrestrial* (of Coal Measures)—*Plants*: Tree ferns, giant equisetums, lycopods, conifers. *Animals*: Molluscs, scorpions, insects, ganoid fishes, and giant amphibians (Labyrinthodonts).

The characters and disposition of the Carboniferous strata suggest their formation during periods of subsidence alternating with rest, while the vegetable remains indicate a warm, moist, and equable climate.

Geikie, *Text-Book of Geology* (1898); A. J. Jukes Brown, *Handbook of Historical Geology* (1886).

**Carbonite**, an explosive for use in coal mines; 25 per cent. nitroglycerine and 75 per cent. wood meal, alkali nitrates, and sulphur. Modern carbonites all contain nitroglycerine, but other constituents have been varied.

**Carborundum** ( $\text{SiC}$ ), silicide of carbon; crystalline solid, colourless when pure, commercially brown to black from impurities; very hard, will scratch ruby; prepared, only at Niagara Falls, by heating sand with coke in electric furnace; used for polishing metals, jewels, and glass.

**Carboxyl**. See ACID.

**Carbuncle**, a circumscribed inflammation of the deeper layers

of the skin, followed by suppuration and sloughing, and the carbuncle may burst upon the surface. The constitutional symptoms are severe, and in elderly and weakly persons may be fatal. The condition is essentially a confluent aggregation of BOILS.

**Carburettor**, part of internal combustion engine using liquid as fuel; converts liquid into gas, mixes with it air making it explosive, and supplies this gas to the engine. See MOTOR-CARS.

**Carcagente**, tn., Valencia, Spain (39° 8' N., 0° 29' W.); dist. fruitful; has mulberry and orange groves; rice; silk and linen fabrics. Pop. 12,000.

**Carcar**, tn., Cebu I., Philippines (10° 9' N., 123° 38' E.); active coast trade and fisheries; sugar-cane. Pop. 32,900.

**Carcassonne** (anc. *Carcaso*), tn., cap. dep. Aube, France (43° 13' N., 2° 22' E.); lower town, well built and prosperous, on l. bk. of Aube; the upper town (Cité), on hill opposite, is the most perfectly preserved specimen in Europe of a mediæval fortress town; restored (1855-79); double rampart; 54 towers; two fortified gates; wine market; agricultural implements, etc.; dates from time of Cæsar; scene of massacre of Albigenses by Simon de Montfort (1210). Pop. 30,700.

**Carcharias**. See SHARKS AND DOG FISHES.

**Carchemish**, tn. of the Hittites (2 Chron. 35:20), at the ferry between Haran and Syria; identified with the ruin Jerablus (Hierapolis) in N. of Syria, on the w. bank of the Euphrates. Has been systematically excavated.

Col. T. E. LAWRENCE was engaged on this work when the Great War began.

**Carcinoma**. See CANCER.

**Cardamoms**, aromatic fruits of several plants belonging to the ginger family (Zingiberaceæ). True cardamom is dried fruit of *Elettaria cardamomum*, native to India and Ceylon, where largely cultivated. Several varieties occur in commerce; used as flavouring; oil in pharmacy.

**Cardenas**, tn. and port, Matanzas, Cuba (23° 2' N., 81° 12' W.); well built; has bronze statue of Columbus; export trade in sugar, leather, tobacco, asphalt; good steamer service. Pop. 28,600.

**Cardiff**, parl. bor. and seapt., on Taff, Glamorgan, Wales (51° 28' N., 3° 10' W.); has castle dating from 11th cent., which was besieged by Cromwell in 1648; town almost destroyed during siege by Owen Glendower in 1404. Among outstanding features are two parish churches, free library, museum, hospital, etc.; several parks, including Cathays Park, in which is Univ. College (one of three colleges of univ. of Wales); magnificent new town hall, munic. buildings, and law courts; offices of Central Board of Education for Wales, borough technical schools, and Baptist theological coll. Great manufacturing and trading centre; exports enormous quantities of coal, also iron, tinplate, etc.; industries include shipbuilding, smelting, iron and steel works, brewing, manufacture of chemicals, etc.; imports ores, provisions, live cattle, esparto; has large cold-storage accommodation and magnificent docks. Pop. 182,300.

**Cardigan**, tn. and seapt., Cardiganshire, S. Wales ( $52^{\circ} 6' \text{ N.}$ ,  $4^{\circ} 39' \text{ W.}$ ), on riv. Teifi; tile and brick making; flannel, blankets, cloth; fishing; exports bricks, tiles, and earthenware; ruins of Cardigan Castle. Pop. 3,600.

**Cardigan**, JAMES THOMAS BRUDENELL, 7TH EARL OF (1797–1868), Brit. lieut.-general; of an overbearing temper, but of undoubted courage, he led the famous charge of the 'Light Brigade' at Balaklava.

**Cardiganshire**, mar. co., S. Wales ( $52^{\circ} 15' \text{ N.}$ ,  $4^{\circ} \text{ W.}$ ); bounded by Merioneth, Montgomery, Radnor, Brecknock, Carmarthen, Pembroke, and Cardigan Bay; surface generally mountainous, except along coast; highest peak, Plinlimmon: chief rivers, Teifi, Aeron, Rheidol, Ystwith. Soil is chiefly sandy or peaty loam; produces wheat, barley, oats, and other crops; many cattle and sheep raised; minerals include lead, zinc, copper, slate; manufactures gloves, woollens; chief towns, Cardigan, Aberystwith, Lampeter. Cardiganshire was occupied by Romans; invaded by Danes in 10th and 11th centuries; by Normans in 1092; annexed to England by Edward I. (1284). Area, 692 sq. m.; pop. 59,900.

**Cardinal**, of chief importance. *Cardinal numbers* are <sup>1</sup>1, 2, 3, etc., distinguished from the ordinals (i.e., the 'ranked' numbers), 1st, 2nd, 3rd, etc. The *cardinal points* of the compass are N., S., E., and W.; of the heavens, zenith and nadir. The *cardinal signs* are Aries, Cancer, Capricornus, and Libra.

*Cardinal Virtues* consist of pru-

dence, fortitude, justice, temperance; the theological virtues, faith, hope, and charity, are sometimes added.

**Cardinal Bird**, a name applied to several scarlet birds on account of their plumage; but more properly to the N. Amer. bunting (*Cardinalis virginianus*), a common cage-bird.

**Cardinals**, R.C. senators or princes of the Church. The Sacred Coll. of Cardinals, since the time of Sixtus V., consists of a number of members not exceeding seventy—viz., six cardinal-bishops, of which the Bishop of Ostia is dean; fifty cardinal-priests; and fourteen cardinal-deacons. All cardinals are chosen by the Pope, and the cardinals themselves choose the Pope, taking control of the affairs of the Church during any temporary vacancy of the Holy See. A cardinal's hat is conferred personally by the Pope, who also bestows upon the cardinal, at the same time, the sapphire ring of his office. A consistory of cardinals usually meets fortnightly, under the presidency of the Pope.

**Cardinal von Widdern**, GEORG (1841– ), Ger. military author; wrote book on Northern France, Belgium, and Holland as a field of operations, also a study of Russian cavalry work in Balkan campaign (1877–8).

**Carding**, process in cotton-spinning, performed by card-room operatives, and consisting of combing or 'carding' the fibres in parallel lines preparatory to further treatment. Improvements were introduced by Peel, Arkwright, and others.

\* **Cardross**, vil., Dumbarton-

shire, Scotland (55° 57' N., 4° 38' W.), on N. shore of Clyde; here Bruce died (June 7, 1329); column in neighbouring vil. of Renton records birth of Smollett. Pop. (of dist.) 11,300.

**Cards, PLAYING.** The origin of card-games is obscure, and their invention has been ascribed to the Egyptians, Arabs, Chinese, and Hindus. Cards were manufactured in England, Germany, and Italy in the early part of the 15th cent.; importation was forbidden by Edward IV.; and a tax was first imposed by James I.

**Carducci, GIUSEPPE** (1836–1907), one of greatest Ital. poets; prof. of literature, Bologna; followed classic tradition; his *Hymn to Satan* marks his revolt against effete conditions, usages, and ideas; his lyrical verse has not been surpassed since Catullus.

**Cardwell, tn.,** Queensland, Australia (18° 15' S., 146° 2' E.), on Rockingham Bay; good harbour; preserved meat and sauces; exports cedar; dugong fishery. Pop. 3,500.

**Cardwell, EDWARD, VISCOUNT** (1813–86), Eng. statesman; member for Clitheroe (1842); was secretary for colonies (1864) and secretary for war (1868); instituted short-service system and army reserve; abolished transportation over seas.

**Carême.** See QUADRAGESIMA.

**Carency, vil.,** Pas-de-Calais, France (59° 22' N., 2° 43' E.), 6 m. N.W. of Arras; captured by French in course of their offensive against Vimy Ridge (May 1915).

**Carew, RICHARD** (1555–1620), Eng. antiquary and translator; trans. first five cantos of Tasso's

*Jerusalem Delivered*; and pub. *Survey of Cornwall* (1602).

**Carew, THOMAS** (1595–1645), Eng. poet; abandoned law for court employment, and was much favoured by Charles I.; one of most brilliant of Cavalier poets, he will live by virtue of a few incomparable lyrics.

**Carey, HENRY** (d. 1743), Eng. poet and musician; chiefly remembered for his songs, of which 'Sally in our Alley' is best known; also wrote innumerable burlesques, farces, and musical pieces; authorship of 'God Save the King' claimed for him, but without good grounds.

**Carey, HENRY CHARLES** (1793–1879), Amer. economist; son of Matthew Carey, also writer on political economy; pub. *Principles of Political Economy*, *Principles of Social Science*; regarded free trade as an ideal, but advocated protection in practice.

**Carey, WILLIAM** (1761–1834), Eng. Orientalist and missionary; one of founders of the Baptist Missionary Soc.; went as missionary to India; studied Sanskrit, Punjabi, Bengali, and other languages and dialects, into which he trans. the Bible, and of which he compiled dictionaries.

**Carfax.** See OXFORD.

**Cariacas.** See DEER FAMILY.

**Cariaco, seapt.,** Venezuela, S. America (10° 27' N., 63° 41' W.), in well-wooded dist., 38 m. E. of Cumana. Pop. 7,000.

**Cariba, or CARIBE FISHES** (*Serrasalmo*), small deep-bodied fishes found in rivers of tropical America; attack in crowds any living thing, and hence have been called 'Dogs of the Water.'

**Caribbean Sea, between An-**

tilles and Central and S. America (10°–20° N., 62°–88° W.); connected by Strait of Yucatan with Gulf of Mexico; formed by subsidence of earth's crust, of which depression forming Mediterranean basin is regarded as continuation.

**Caribbee Islands**, or LESSER ANTILLES, chain of islands, E. of Caribbean Sea (16° N., 61° 30' W.); portion of W. Indies; begins with Saba on N., and ends with Grenada on S. See WEST INDIES.

**Caribe Fishes**. See CARIBA.

**Caribou**, Ind. name for N. Amer. reindeer, which are essentially similar in characteristics and habits to European reindeer, though not domesticated; their flesh supplies Indians and Eskimos with main store of food.

**Caribs**, S. American race, originally occupying region of headwaters of Xingu and other s. tributaries of Amazon; now scattered over country between Central America and Central Brazil.

**Caricature** (Ital. *caricatura*), drawing, painting, or description in which individual characteristics are so exaggerated, or distorted, as to appear ridiculous. The word was first employed in English in *Christian Morals*, a posthumous book by Sir Thomas Browne. It is also to be found in its Ital. form in the *Spectator* (1712). There is evidence in carvings and papyri that the art of caricature was employed to a limited extent by the Greeks, Romans, and Egyptians. It was not, however, until the Middle Ages that its use became widespread throughout Europe; it was then usually expressed in the form of gargoyles and grotesque decorations in eccles. arch. Its most notable early exponent

was HANS HOLBEIN (1498–1554), in his *Dance of Death*.

Caricature was practised to some extent in England during the Tudor and Stewart periods, but it was not until the 18th cent. was well advanced that the art may be said to have flourished. This period saw the rise of William Hogarth (1697–1764), James Gillray (1757–1815), and Thomas Rowlandson (1756–1827); later came George Cruikshank (1792–1878)—all giants in their particular medium of social satire. The later development of the art may be said to have begun with the founding of *Punch* (1841), which produced a number of brilliantly clever caricaturists. The familiar cover was designed by Richard Doyle (1824–83), and other artists associated with the early days of the paper were John Leech, Tenniel, Keene, and Du Maurier. To these succeeded on the staff of *Punch*, and other illustrated journals, Linley Sambourne, E. T. Reed, Raven Hill, Sir F. C. Gould, Phil May, Leslie Ward ('Spy'), Tom Browne, Harry Furniss, Max Beerbohm, and numerous others of brilliant accomplishments.

Caricature began to flourish in France about 1830, when the journal *La Caricature* was founded, and the most notable workers in this genre have been Daumier, Grandville, Sommier, Gavarni, Decamps, Charlet, Traviès, Rafet, Isabey, Giraud, 'Caran d'Ache' (Emmanuel Poiré), and others. In America the art has been largely developed in the journal called *Puck*. In Germany the caricatures contained in the *Fliegende Blätter*, *Simpli-*



*cissimus*, and *Jugend* are powerful though often coarse.

Wright, *History of Caricature* (1865); M. H. Spielmann, *History of Punch* (1895); Paston, *Caricature in 18th Century*.

**Caries**, medical term applied to a process of gradual disintegration of a bone or tooth; may be caused by an injury or may result from syphilis, tubercle, or 'struma.'

**Carigara**, tn. and port, Leyte, Philippines (11° 20' N., 124° 40' E.); cotton manufactures and hemp industry. Pop. 16,400.

**Carignan**, PRINCES OF, younger branch of house of Savoy; Charles Albert, prince of Carignan, succeeded as King of Sardinia (1831), and was father of Victor Emmanuel II., King of Italy (1861).

**Carinaria**. See GASTEROPODA.

**Carini**, tn., Palermo, Sicily (38° 8' N., 13° 11' E.); mediæval Gothic castle, also ruins of anc. town. Pop. 13,900.

**Carinthia**, stâte, Austria, with Klagenfurt a plebiscite area for assignment either to Austria or Jugo-Slavia (46° 45' N., 14° E.); mountainous; watered by Drave; Alpine lakes; mineral springs; cap. Klagenfurt; produces lead and iron ores; manufactures iron and steel goods, machinery, rails; rye, oats, and wheat grown; horses, cattle, and sheep raised. Area, 3,986 sq. m.; pop. 406,200.

**Carisbrooke**, tn., Isle of Wight, England (50° 42' N., 1° 20' W.); formerly cap.; mediæval stronghold; ruined castle was prison of Charles I. (1647-8); his daughter Elizabeth died here (1650); has remarkable well. Pop. 4,000.

**Carisbrooke**, ALEXANDER ALBERT MOUNTBATTEN, 1ST MARQUESS OF (1886- ), eldest son

of Princess Beatrice, youngest daughter of Queen Victoria, and the late Prince Henry of Battenberg; entered army (1911) and served during Great War (1914-18). Assumed surname of Mountbatten and created Marquess of Carisbrooke (1917).

**Carlén**, EMILIA (1807-92), Swed. novelist; Eng. trans. of her works are common; her daughter, ROSA CARLÉN (1836-83), was also a well-known writer.

**Carleton**, WILLIAM (1794-1869), Irish novelist; chiefly remembered now by his *Traits and Stories of the Irish Peasantry* (1830-33); one of the most realistic of Irish writers.

**Carleton Place**, tn. and port, Ontario, Canada (45° 10' N., 76° 6' W.); lumber; woollen and iron goods. Pop. 4,000.

**Carlile**, WILSON (1847- ), English churchman and social worker; founder of Church Army, a working man's mission for rescue of outcasts of society; appointed prebendary of St. Paul's Cathedral (1906); author of *The Continental Outcast*, *The Church and Conversion*, etc.

**Carling**, SIR JOHN (1828-1911), Canadian politician; receiver-general of Canada (1862); minister of public works and agriculture (1885-92); minister without portfolio (1892-5); senator and privy councillor (1891).

**Carlingford**. (1) Tn., seapt., Louth, Ireland (54° 2' N., 6° 12' W.); seaside resort; fisheries, especially oysters. Pop. 600.

(2) LOUGH, inlet between Louth and Down, Ireland; entrance rocky; shoals; five lighthouses.

**Carling Sunday**, fifth Sunday in Lent, so called from 'dish of

fried carlings (dried peas) eaten on that day; old line, 'Carling, Palming, Paste (Paschal) Egg Day,' was remembrancer of three consecutive Sundays.

**Carlisle**, tn., Cumberland, England (54° 53' N., 2° 56' W.); important railway centre; seat of bishop; has fine cathedral founded by William Rufus, who also built the castle; grammar school founded by Henry VIII.; fine docks; iron foundries, ship-building yards; manufactures textiles, tinplate, shoes; belonged to Romans, many traces of whose occupation remain; sacked by Danes (875); added to England by William Rufus; besieged by Bruce (1315), Leslie (1644-45). Owing to proximity of Gretna munition works, the State LIQUOR CONTROL BOARD acquired all licensed premises, breweries, and clubs in Carlisle and surrounding dist., and inaugurated reformed public-houses, refreshment rooms, etc. Pop. 56,440.

**Carlisle**, co. seat, Cumberland co., Pennsylvania, U.S. (40° 10' N., 77° 17' W.); seat of Dickinson Methodist Coll. (1783); bombarded by Confederates (July 1863); manufactures boots and shoes, and railway cars; mineral springs in vicinity. Pop. 10,300.

**Carlisle**, FREDERICK HOWARD, 5TH EARL OF (1748-1825), Eng. politician; president Board of Trade (1779); appointed viceroy of Ireland (1780-2); known as author of poems and of two highly esteemed tragedies. He was guardian of Lord Byron, the poet.

**Carlisle**, GEORGE WILLIAM FREDERICK HOWARD, 7TH EARL OF (1802-64), Eng. politician, was

a member of the cabinet under Melbourne and Russell, and twice viceroy of Ireland (1855-8 and 1859-64); author of poems and other works, and a popular lecturer on literary subjects.

**Carlists**, adherents of DON CARLOS of Spain (1788-1855), brother of Ferdinand VII., whose infant daughter Isabella, despite the Salic Law, was proclaimed queen after his death; civil war ended with defeat of the Carlists (1840); the grandson of Don Carlos, CARLOS VII., revived claim, but an attempt to enforce it was defeated (1876). The Carlist party had once many ardent supporters, particularly in N. of Spain, and among the clergy, but has now little hold on the country. See SPAIN.

**Carloman**, name of three Frankish rulers—(1) son of Charles Martel, the brother of Pepin the Short (d. 754); (2) King of Franks, son of Pepin the Short, brother of Charlemagne (751-71); (3) King of France (d. 884), son of Louis II. (the Stammerer); a weak ruler.

**Carlos**, DON (1545-68), son of Philip II. of Spain, was of vicious character and feeble intellect; imprisoned by his father, and died mysteriously. The account of his death given in Schiller's famous tragedy *Don Carlos* is unhistorical.

**Carlos I.** (1863-1908), King of Portugal, succeeded in 1889; determined to assert power of crown, suspended the constitution (1907) and appointed a dictator; was assassinated in Lisbon, together with his eldest son, Louis (1908). He was succeeded by his younger son, MANOEL II. (b. 1889), who

was dethroned by the republican party (1910), and sought refuge in England.

**Carlovingians.** See under CAROLINGIANS.

**Carlovitz.** See KARLOWITZ.

**Carlow.** (1) Co., Leinster, Ireland; chiefly agricultural; dairy farming; corn, flour, butter; 12th cent. cathedral at St. Lazerian. Pop. 36,250. (2) Munic. bor., cap. of above (52° 50' N., 6° 55' W.); brewing, flour milling, bootmaking; Catholic Coll. of St. Patrick (1793); ruins of anc. castle (1180). Pop. 6,500.

**Carlsbad**, tn. and wat.-pl., Bohemia, Czecho-Slovakia (50° 13' N., 12° 53' E.); fashionable resort, noted for mineral springs, of which most remarkable is Sprudel; this has numerous orifices and temp. of 164° F.; mineral waters and Carlsbad salts are largely exported; named after Charles IV. (1347-78). Conference of Ger. ministers and officials held here (1819), at which resolutions (*Carlsbad Decrees*) for the suppression of Liberal agitation were passed. Pop. 14,800.

**Carlsrona.** See KARLSKRONA.

**Carlsruhe.** See KARLSRUHE.

**Carlton**, tn., Notts, England (53° 11' N., 0° 47' W.); lace and hosiery. Pop. 15,600.

**Carlton Club**, Conservative Club founded by Duke of Wellington (1832); present premises, Pall Mall, London.

**Carlisle**, tn., Lanarkshire, Scotland (55° 44' N., 3° 51' W.); coal and iron. Pop. 5,200.

**Carlyle**, ALEXANDER (1722-1805), Scot. preacher; his *Autobiography* (pub. 1860) is valuable as a commentary on the Scot. life of his period; friend of Adam

Smith, David Hume, etc.; and is referred to by Smollett in his *Humphry Clinker*.

**Carlyle**, JOHN AITKEN (1801-79), Scot. physician in London, brother of Thomas Carlyle; private physician to Countess of Clare and Duke of Buccleuch; ed. Irving's *History of Scottish Poetry*, and trans. Dante's *Inferno*; left two medical bursaries to Edinburgh Univ.

**Carlyle**, THOMAS (1795-1881), Scot. historian, essayist, and philosopher; born at Ecclefechan, Dumfriesshire; second son in a family of ten children of James Carlyle, stonemason, and later small farmer. He was educated at the parish school, Annan Academy, and, in 1809, became a student of Edinburgh Univ. Here he acquired little beyond a slender knowledge of the classics and a moderate success in maths. He had intended entering the ministry, but this idea was abandoned, and he was appointed mathematical master at Annan Academy, exchanging later to a school at Kirkcaldy, where he met and formed a lasting friendship with Edward Irving, master of a rival school.

By 1818 Carlyle was back in Edinburgh, where he studied law and took private pupils. Law, in its turn, was abandoned, but the teaching was continued for some years. Next he embarked upon a literary career, was engaged by Dr. Brewster to write articles for the *Edinburgh Encyclopædia*, and received £50 for a trans. of Legendre's *Geometry*. At this period he also wrote his *Life of Schiller*, translated Goethe's *Wilhelm Meister*,

